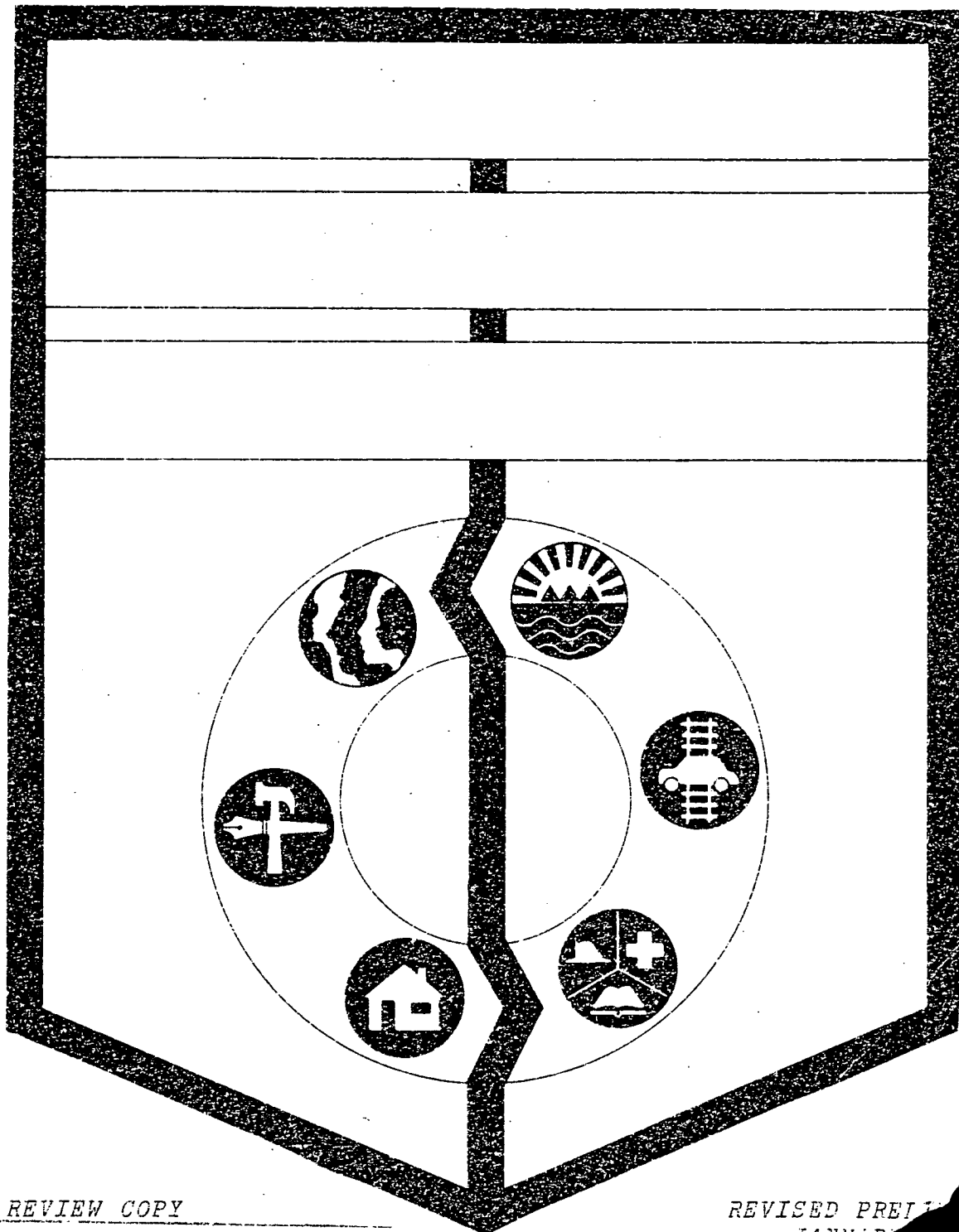


COMPREHENSIVE STAGING PLAN

1980

*An Amendment to
the General Plan
for Montgomery County*



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REVISED PRELIMINARY
JANUARY

January
1980

INTRODUCTION

The Concept of Staging

Traditionally, master plans have consisted of maps and text describing the way in which land should ultimately be used. These plans, when complete, were designed to achieve balance among land uses and facilities.

In recent years, many have come to recognize that while the ultimate pattern of development envisioned by a plan may achieve a state of equilibrium, land uses and facilities may frequently be out of balance during most of the time prior to achieving all that is recommended in the plan. In 1964, the General Plan, On Wedges and Corridors, recognized this problem, stating (at p. 56): "All required public services should be provided in a logical sequence to facilitate development with orderly stages. . ."

As the county's planning philosophy has moved from accommodation of growth through provision of zoned land and public facilities to one of managing growth, the importance of staging has grown. Certain facilities, particularly water, sewers and transportation systems are shapers of the urban pattern, controlling both the location and density of growth. In this sense, the government is a co-investor with the private sector in the development process and it should expect a reasonable return on its investment in the form of public benefits. Government should not extend facilities great distances at excessive and unrecoverable cost to serve development that generates little public benefit. It should program and build those facilities which guide and encourage beneficial growth, and which are needed to avoid serious deficiencies in service to current and future county residents and businesses.

Staging should coordinate the public and private sector so that at any given time development will not outstrip needed public facilities. Since a perfect match is unlikely, it is essential that both growth and service levels be regularly monitored so that revisions in the staging plan can be made as necessary or feasible.

As proposed in this plan, staging consists of two central elements:

1. Coordinating the amount of growth to be permitted through the regulatory process with the capacity of critical public facilities so that reasonable levels of service are maintained. This results in establishing a growth "threshold" for housing units and jobs short of the holding capacity recommended by master plans.
2. Regular review of these thresholds by the ~~Council~~ ^{County Executive and} in light of the decisions annually made by ~~the County and State~~ ^{County and State} elected officials ^{as well as} on public works, and revision of the thresholds to reflect changes in the carrying capacity of the programmed facilities.

The Evolution of Staging in Montgomery County

Staging is not a new idea in Montgomery County. Since adoption of the General Plan, a number of actions have been taken toward the objective of county-wide staging.

- o The General Plan identified areas where development should be delayed or severely restricted or delayed.

- The Ten Year Water Supply and Sewerage System Plan has required the county to identify sewer service areas in terms of the time at which service should be extended.
- The Capital Improvements Program (CIP) schedules projects for construction.
- The Germantown master plan (1973) demonstrated how staging could work, proposing to enlarge the sewer service envelope and to rezone new areas for their ultimate density in unison with the construction of road systems. Staging has been recommended to some degree in other plans, such as those for the Bethesda central business district and the Shady Grove area. All master plans currently in preparation also address staging issues.
- The Adequate Public Facilities Ordinance (1973) allows the Planning Board to disapprove a subdivision if it finds that existing facilities plus those contained in the CIP are inadequate to serve it.

The Need for a Comprehensive Staging Plan (CSP)

The approaches to staging now used in Montgomery County do not add up to a complete or fully workable system. Each has made an important contribution to the development of the staging concept, but if we continue to employ them as we have in the past, some serious problems can be anticipated.

1. There is no comprehensive approach to staging. Some aspects are county-wide, others are not. Area master plans are developed at different times, necessarily with different assumptions about the rest of the county or region.

The water and sewer plan, the CIP, and the State Highway Administration construction program are not related to each other very well. The Adequate Public Facilities (APF) Ordinance is applied only on a case-by-case basis. Some development ^{which does not feel metropolitan approval} of great significance is not covered by the ordinance.

2. Current staging measures are often applied on an ad hoc, localized basis without appreciation of their broader policy context and their non-local consequences. ^{Once the sewer service envelope was aligned with general development policy, but} The principal factor in expanding the sewerage service envelope is individual requests from land owners. A roadway of great significance to the county's future patterns of growth or economic base may be ^{deleted} ~~vetoed due to local opposition~~, with but slight consideration of its county, regional or State importance. Subdivisions may be disapproved due to the inadequacy of the closest critical intersection even though traffic may move freely beyond that point.

3. Existing staging measures, particularly the Adequate Public Facilities Ordinance, do not reenforce as they should the Wedges and Corridors pattern of the General Plan. It is easy for outlying development proposals on the urban fringe to meet the transportation standard, and increasingly difficult for projects in designated high employment or dense housing areas to pass the adequate public facilities transportation test.

4. Existing staging measures do not have a built-in system to correct for unavoidable errors in assumptions about the future. As a result it tends to be rigid; correction, especially on a county-wide scale, is cumbersome and time-consuming.

THE C.S.P. - WHAT IT IS; WHAT IT DOES

It Amends the General Plan

This Comprehensive Staging Plan (CSP) adds a staging element to the General Plan, in accordance with §§ 7-108(a)(3)(iii) and (iv) of Article 66-D, Annotated Code of Maryland (1978). It applies to all of the area within the planning and zoning jurisdiction of Montgomery County. It does not apply to the municipalities of Rockville, Gaithersburg, Poolesville, Barnesville, Brookeville, Laytonsville and Washington Grove.*

It Amends Master Plans

The staging plan also amends all adopted master plans or functional plans with respect to any staging recommendations that are inconsistent with it. Since most plans have no staging recommendations, the CSP simply adds to them a growth threshold based upon the carrying capacity of currently approved facilities. More recent plans containing staging elements are consistent with the staging plan, although it may be more explicit than they are.

The comprehensive staging plan has been amended to make it consistent with the staging element of the Bethesda CBD plan as amended January 1980. The adopted Germantown plan does not establish a specific threshold for each stage of growth. It relies on use of the Adequate Public Facilities Ordinance to limit growth to the capacity of each increment of the transportation system. Sewer service is to be extended as transportation capacity becomes available. Thus, there is an implicit

*assumptions for growth in these municipalities are included for consistency with the underlying ordinance

threshold for each stage of growth in Germantown. The CSP simply gives advance notice of the growth thresholds. It makes the threshold explicit rather than implicit.

THE EFFECT OF THE CSP

A Guide to Action

As in the case of any plan recommendations, the Comprehensive Staging Plan is a guide for later, separate, specific action by elected officials or by agencies. It recommends changes in the Adequate Public Facilities Ordinance and in the process of considering the CIP, ^{by the Executive and Council} But these recommendations are not self-executing. They require separate, independent action by the Council ^{and Executive}

Does Not Limit Executive or Council

The CSP does not, therefore, limit in any way what the Executive may recommend or the Council may adopt in the CIP. It does not restrict official action on the Water and Sewerage Plan. It does not commit any official to any road, sewer or water supply project or any other public works project which is not currently in an adopted program.

Does Not Change Zoning

The CSP does not change the recommendation of any adopted or pending master plan with respect to land use or zoning. It does not provide a basis for challenging that zoning. It accepts the land uses and public facilities recommended by each plan.

How It Can Be Used

To repeat: The CSP simply recommends interim thresholds for new housing and jobs based upon the capacity for adequate service of the facilities which have already been approved. When these thresholds are matched against the forecasts for housing development and jobs for each area, the staging plan helps officials and the public to understand when new facilities will be needed if new growth and those who already live or work there are to continue to be adequately served. If new facilities are programmed, only then will the thresholds be revised to account for them.

Elected officials can make three basic responses to this information: (1) They can program the additional facilities needed to maintain adequate service. (2) They can decide to limit or discontinue growth until facilities can be expanded. (3) Or, they can determine that the standard of service is too high, and lower it to what they regard as a more reasonable level.

They may, of course, also fashion some combination of these three responses.

The value of this approach is that it operates "up front" and in the open. Planning and development policy will be clearly spelled out, rather than gleaned from inference, accident and indirection. The public choices and their environmental, fiscal and economic consequences can be more fully explored and understood.

In approving the Staging Plan, the Council, therefore, approves only the thresholds established for Stage One. It does not approve or recommend any projects listed in the fifth report on Growth Policy as in Stages Two or Three. These "stages" simply illustrate one possible way of adding the new facilities recommended by

adopted master plans or the General Plan. Actually, Stages Two and Three will never be adopted. By revising the CSP every two years on the basis of projects adopted in the CIP or State Highway Administration (SHA) construction program the previous year, the Stage One thresholds are continuously updated, just as the CIP is.

To summarize to this point:

(1) The CSP does not change any zoning or provide a technical or legal argument for any change in the land use recommendations of master plans.

(2) The CSP does not limit either the authority or discretion of the Executive or Council in deciding what to place in the CIP.

(3) The CSP could amend any inconsistent staging elements in adopted plans, but in fact none exist.

(4) The CSP does provide a comprehensive view for both officials and the public to understand the relationships that exist between growth and facilities and the consequences of each on the General Plan's proposed development pattern.

(5) The CSP does place limits on growth within policy areas in the absence of additional public facilities.

(6) The CSP thresholds will be updated every two years, based on approved facilities.

Proposed Changes in the Adequate Public Facilities Ordinance

The CSP recommends that the Adequate Public Facilities Ordinance be amended so that the thresholds established in the Staging Plan would be used by the Planning Board as the basic test for whether development in an area can be adequately served.

As the law now stands, the Planning Board first determines whether a proposed subdivision is within categories 1-3 of the sewer service envelope. If so, the Board then determines whether transportation facilities to serve the project are adequate. This is determined by finding whether existing traffic and that generated by recorded lots in the vicinity when added to traffic produced by the proposed subdivision will cause the nearest critical intersection to operate at a level of service worse than "D," as defined by the Highway ^{Capacity} ~~User's~~ Manual.

If the CSP recommendations are implemented, this rigid, single standard would be replaced. Development could then proceed if (1) it is within sewer service categories 1-4, and (2) if the amount of new growth, when added to development with approved sewer authorization is below the threshold for its policy area. (3) If, however, the traffic generated by the project creates unacceptable congestion in its immediate vicinity and there is no practical means, through use of transit, physical improvements or operational measures, to ameliorate the condition, the project may still be disapproved for lack of adequate transportation service.*

* This "second standard" is proposed in response to criticisms of the original proposal by the Executive staff and a number of civic groups.

The CSP recommends that before a project is included in the calculation of transportation capacity from which the thresholds are derived, it should have at least half of its construction cost programmed in the CIP. This recommendation is made to reduce the lag time between development and the availability of transportation facilities.

The loophole in the ordinance that allows development which occurs on recorded lots to bypass the adequate public facilities test should be closed. Before sewer authorization is granted, a development should meet the APF tests described above.

The Ordinance should also be amended to allow a developer to provide or accelerate a needed facility through dedication and construction, or by means of a cash contribution to its construction, to ensure its timely completion if it has not been programmed to coincide with his desired production schedule.

The Planning Board will keep track of how much capacity has been committed to development in a policy area by monitoring sewer authorizations. Since authorizations expire in 18 months after being issued, a project is usually ready to start development when they are obtained. Thus it is a "real" project, whereas a number of approved preliminary plans do not progress to this stage. To count preliminary plans would needlessly inflate the estimates of the commitment to use facility capacity. To continue to use record plats puts unnecessary and unwise pressure on the developer to record lots on which he may have no immediate intention of building. This process will allow the Planning Board to maintain a realistic account of development activity and its demand on public facilities, and to provide enough lead time for the Executive, Council and the State to analyze the need for, and program, additional facilities.

Finally, the Adequate Public Facilities Ordinance should not be administered to penalize a developer if the government withdraws a facility on which development approval was originally based. So long as he meets his approved subdivision schedule, he should be allowed to proceed to complete his project.

Why Use Thresholds?

Policy area thresholds are preferred over the current use of L.O.S.-D at the nearest critical intersection to assess the adequacy of facilities because, from a technical point of view, it is both fairer and more accurate to examine traffic impacts on a cumulative basis in a larger area than to examine only the instant case at a single stress point.


The existing approach allows a large number of smaller subdivisions near well-functioning intersections (or even statistically insignificant projects near poorly operating ones) to be approved although their cumulative effect on a "downstream" link of roadway or intersection may be awesome. The threshold approach allows consideration of the aggregate impact of all development activity. It also allows an understanding of cumulative downstream impacts. Particularly serious and irremediable local conditions can still be used by the Board to disapprove a development. This makes possible a balance of the local and larger-scale interests, which is not possible in the current approach to administering the Adequate Public Facilities Ordinance.

The Relation of the CSP ^{to Road and Transit} and SHA Programs

Most of the master plan roads which provide capacity critical for new development to enjoy adequate levels of service are State roads. It has been argued

that such roads will not be built in advance of public demand. Even after the need is obvious, federally mandated decision processes are cumbersome and slow, and State funding so scarce, that they may not in fact be constructed, if at all, until many years after the need is abundantly clear. Development should not, it has been argued, be delayed due to State roads; thresholds should not be made dependent on facilities beyond the power of the county to provide.

State roads are, however, included in the current adequate public facilities test. In fact, a State road intersection is quite often the nearest critical intersection subjected to the APF analysis. Under the operation of the existing ordinance, the Board foresees the likelihood that it will curtail approval of subdivision activity in several locations in the county that are of great significance in our economic development program. These include areas served by State routes 118, 124, 97 and U.S. Route 29, and some intersections with I-270 (Figure 1). The map of intersections at level of service E or F (Figure 2) shows how important the State network is to the county.

The CSP approach is substantially less dependent upon the State program than the present system. It looks basically at the impact on overall traffic conditions in a policy area, but retains consideration of local conditions and allows disapproval where no amelioration is possible. 

While funding is clearly an impediment to timely construction of State roads, the principal impediment in Montgomery County has been local opposition in the absence of any countervailing county-wide perspective. This factor has delayed the State program in the county by at least a decade, and caused monies that were, in fact, available at one time to be spent elsewhere in the State. In Montgomery County, at

Insert on P. 12; end of third paragraph

In this look at overall conditions, both the current adequate public facilities test and the CSP approach also have an accounting for transit facilities in the determination of adequacy. Using the current test transportation can be deemed adequate if mass transportation sufficient to serve the proposed subdivision is available or programmed within the area affected or within one-third mile of the subdivision. The CSP approach proposes a more comprehensive consideration of transit availability and defines five different levels of transit service being provided to different areas of the County.

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The Staging Plan also offers a more effective tool to highlight the importance of the investments being made in expanding transit availability. The investments by the federal, state and county in the Metrorail, commuter rail and Metrobus and the County investment in the Ride-On systems are all integral actions supporting the General Plan.

Figure 1

POSSIBLE APF
PROBLEM AREAS

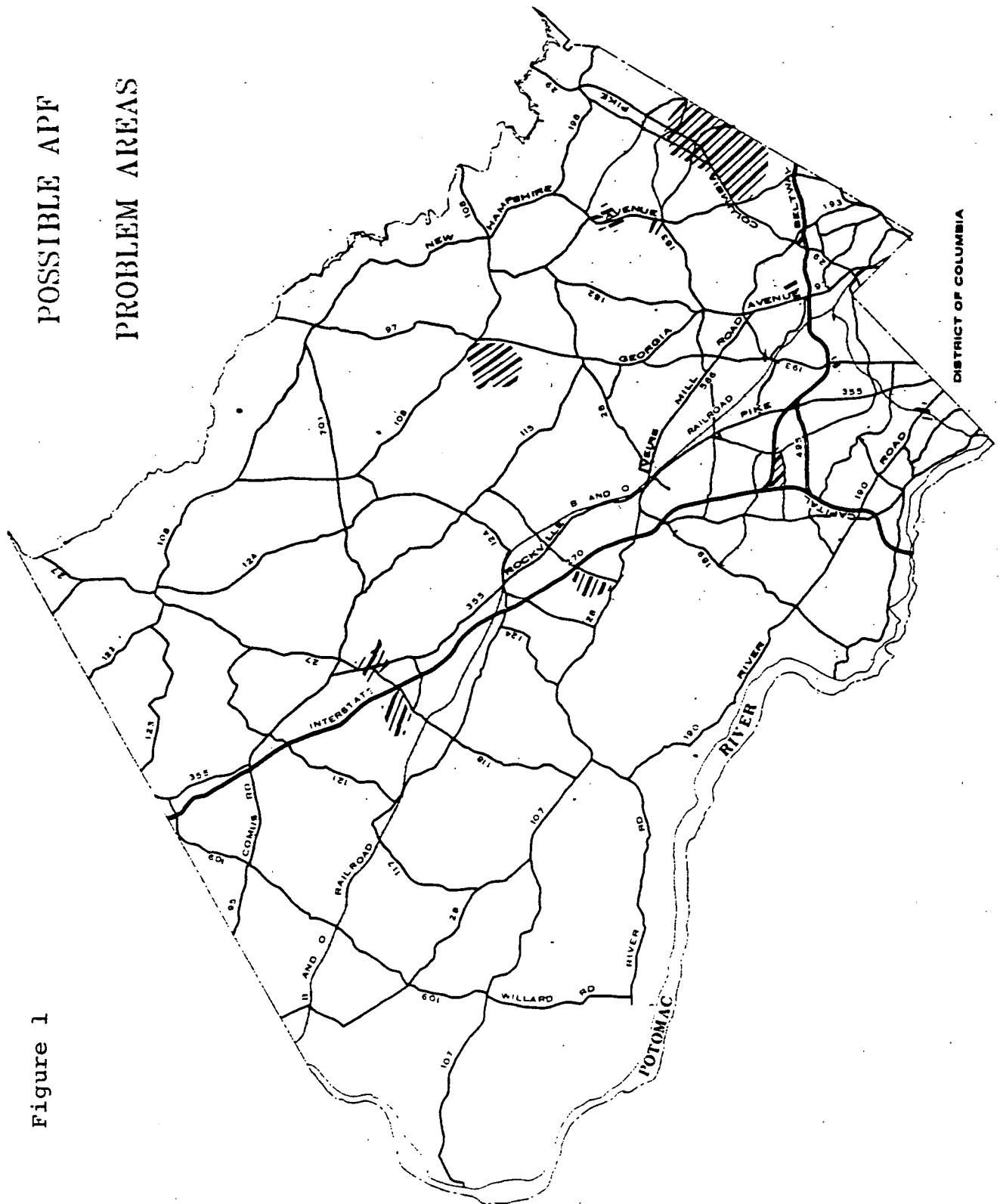
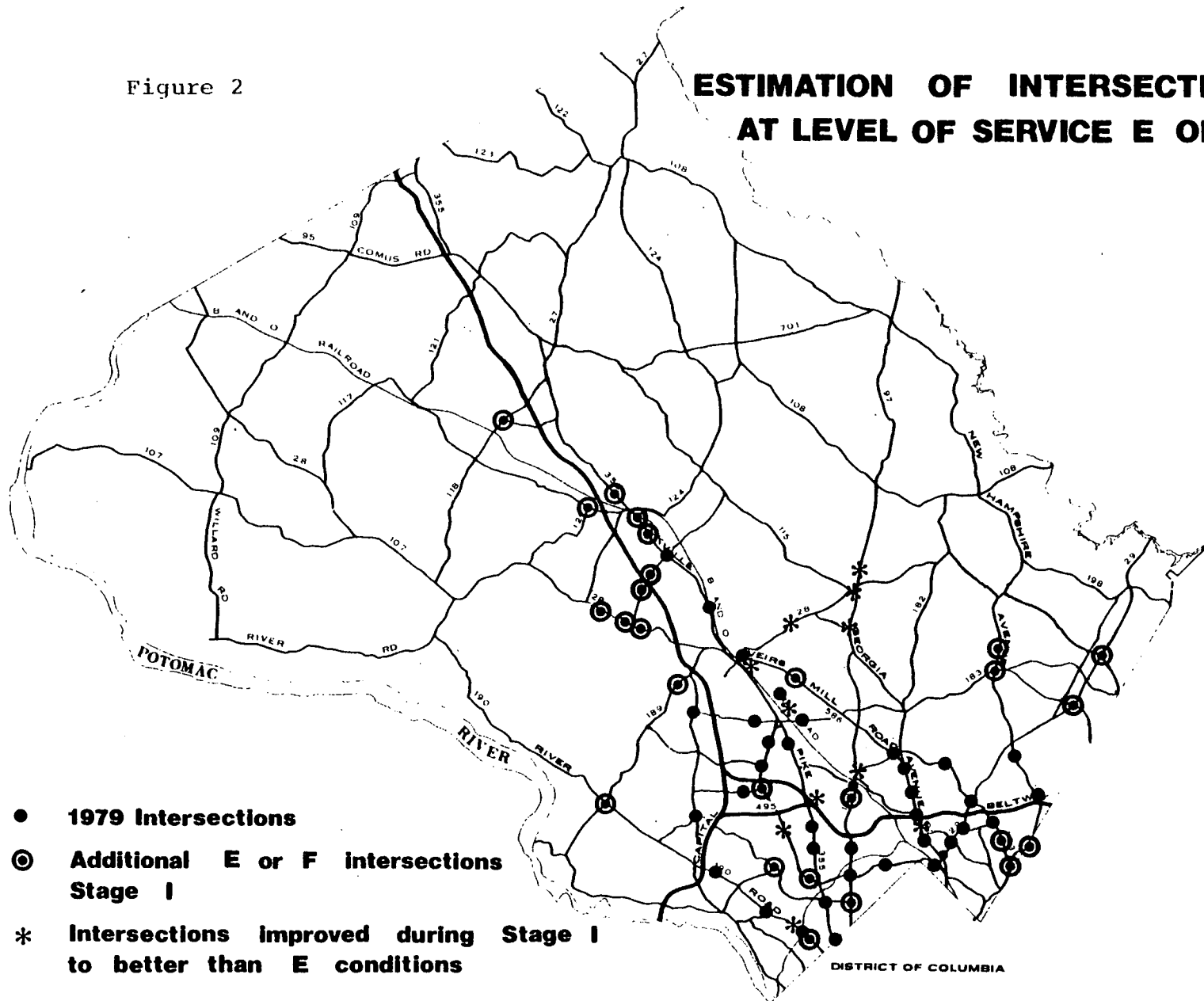


Figure 2

ESTIMATION OF INTERSECTIONS AT LEVEL OF SERVICE E OR F



least, there is little historical substance to the argument that if we allow development to proceed, new residents will someday demand the road. The contrary appears more likely, particularly where no road exists and right of way must be acquired.

The county's officials are not ^{without influence} ~~powerless~~ in setting priorities for the State program and in scheduling projects. State law provides for county government review of the program, and except for the State primary system - the interstate and U.S. highways - local choices, expressed through county government and the delegation, govern the program within its financial limits.

→ The Staging Plan offers the county a more effective tool than it now possesses in negotiating for county advantage in the State roads system. It can help identify strategic priorities more clearly and help the delegation and State officials understand the consequences of delay or deletion of a project. It can also provide a better rationale for the efforts to increase highway funding to keep up with the transportation needs of the State.

The CSP is by no means a guarantee of adequate funding or scheduling of State roads. It does not even do that for county roads. It does, however, make the choices and their consequences clearer. It also offers a means of dealing with the issue forthrightly. If an area served by a proposed State road cannot continue to develop and enjoy an adequate level of service, the same three choices outlined above are available: (1) build the facility, (2) stop the development, (3) change the standard of service to be provided. Any of these choices will be made openly, with full public debate of the problems and consequences. Today, the only choice is to disapprove any more development once the critical point has been reached.

Sunset Clause

To prevent the thresholds in the Staging Plan from being frozen in place, the Council resolution approving the plan should contain a "sunset" clause under which the plan expires in two years. When that occurs, if the Council does not adopt a revised set of thresholds, the ad hoc system of subdivision approval now in effect would be restored.

The CSP-CIP Process

To achieve a balance between private development and public improvements so that present and future residents and workers can enjoy a reasonable level of service, the regulation to which the private development industry is subjected must be balanced by commitment by government to provide those facilities that are of strategic importance in furnishing a reasonable amount of capacity for growth.

To facilitate the process of careful analysis and review of these strategic decisions, the CSP should be presented to the Council every two years for major revision. The Planning Board, working closely with Executive staff, the WSSC and the State Highway Administration, will use the currently adopted CIP, Ten Year Plan, and State construction program as the basis for calculating the capacity of the public facility system to serve new development. Population, housing and employment forecasts, together with other information such as subdivision activity, sewer authorizations, building and occupancy permits, traffic generation rates and monitored traffic conditions will be revised. Taking all these things into consideration, the Board will recommend, for ^{Executive} Council review and ^{Council} action, revised thresholds for each policy area, and revised standards of service for the policy area groups if conditions warrant

to the County Executive and Council

it. The Board may suggest additional facilities which could be included in the next CIP or State transportation program, which would increase capacity for development or improve service levels.

This biennial review of the CSP not only keeps it current with changes made by elected officials in the public facility system, but focuses official and public attention on the strategically important public facility and growth pattern issues of the county. The CSP should direct attention to the entire transportation system or the overall character of the sewer service envelope, rather than to specific projects. This provides the Council, Executive, and the legislative delegation an opportunity to look beyond the immediate fiscal situation and to gauge future problems and requirements more clearly as a basis for the particular decisions that must be made annually.

The biennial CSP revision would not replace the CIP in that year. Rather, it is suggested that, in the years for CSP review, the Executive and Council agree to focus their CIP review primarily on new or emergency projects and on the routine extension of projects already approved in the last CIP. This would leave time for the Council to carefully review the CSP and act on it.

may be used however
In the intervening year, ~~the Executive could use~~ the newly adopted CSP ~~as he~~ *the Executive*
may determine in
~~sees fit in preparing the CIP.~~ The Council would give it the usual rigorous review. The CSP would be available for use, but would not control specific actions. The CIP which is adopted would then become the basis for the next CSP. The adopted CIP controls the preparation of the CSP, but the CSP does not predetermine or limit Executive or Council action on the CIP. The thresholds adopted in the CSP simply govern the Planning Board's actions in the approval of subdivisions.

The Revision Process

The biennial revision process offers an opportunity to the public, government agencies and the Board to reappraise the validity of the service standards, the adequacy and priority of programmed and planned facilities and the effect of revised growth methods on other county policies.

The revision process starts with adoption of the CIP, and proceeds through the following steps:

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Step 1: The Planning Board staff takes the CIP and the State Highway Administration construction program and applies the facilities service standard for each area to it to produce a "trial" threshold for each area. This will be sent to county and State agencies for comment.

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Step 2: The staff prepares the 10, 15 and 20 year population, housing and employment forecasts for each policy area and arrays them against the threshold figures from Step 1.

Step 3: A public review process is initiated with publication of trial thresholds, forecasts and level of service standards for each policy area. This process will include a series of public worksessions with civic, business and agency leadership. Its objective is to provide an opportunity for these groups to review with the Board the assumptions, methods, and results of Steps 1 and 2, and to advise the Board on (1) any revisions to any of these matters and (2) an initial listing, by priority, of any additional projects in each policy area for consideration as Board recommendations to the County Executive or other agencies for their next capital program.

Step 4: The staff will prepare a revised set of thresholds, responding to recommendations from the groups. It will also prepare an explanation of changes and a fiscal impact analysis of the results and of the facilities' prior listing.

Step 5: The public groups will meet in worksession with the Board to review the staff report and revise their earlier recommendations as they see fit.

Step 6: The Board will consider the recommendations of the groups and that of staff in preparing a preliminary draft amendment to the CSP. The draft will be published and circulated for Executive and public comment.

Step 7: The Board will hold a public hearing on the preliminary draft.

Step 8: Based on the hearing testimony, the Board will revise the plan in public worksessions and prepare a final draft for review by the Executive and action by the Council.

Step 9: The Council will hold a hearing on the final draft.

Step 10: After public worksessions the Council will approve the plan with whatever amendments they see fit.

Step 11: The MNCPPC adopts the plan, which now becomes the basis for development review with respect to adequate public facilities and a guide for officials preparing capital programs.

A simplified flow chart of this process appears in Figure 3.

The Effect of Decision Options

Another concern expressed about the CSP is that it may limit the options of the Executive or Council. We have already seen that it does not limit their authority to propose, or their power to act on the CIP. Options are increased rather than reduced to the extent the CSP process allows officials to see farther ahead than they previously could. Under the current system, things proceed to a crisis. Then options are really limited. The farther ahead one can foresee a need to act, the more choices there are.

THE STRUCTURE OF THE CSP

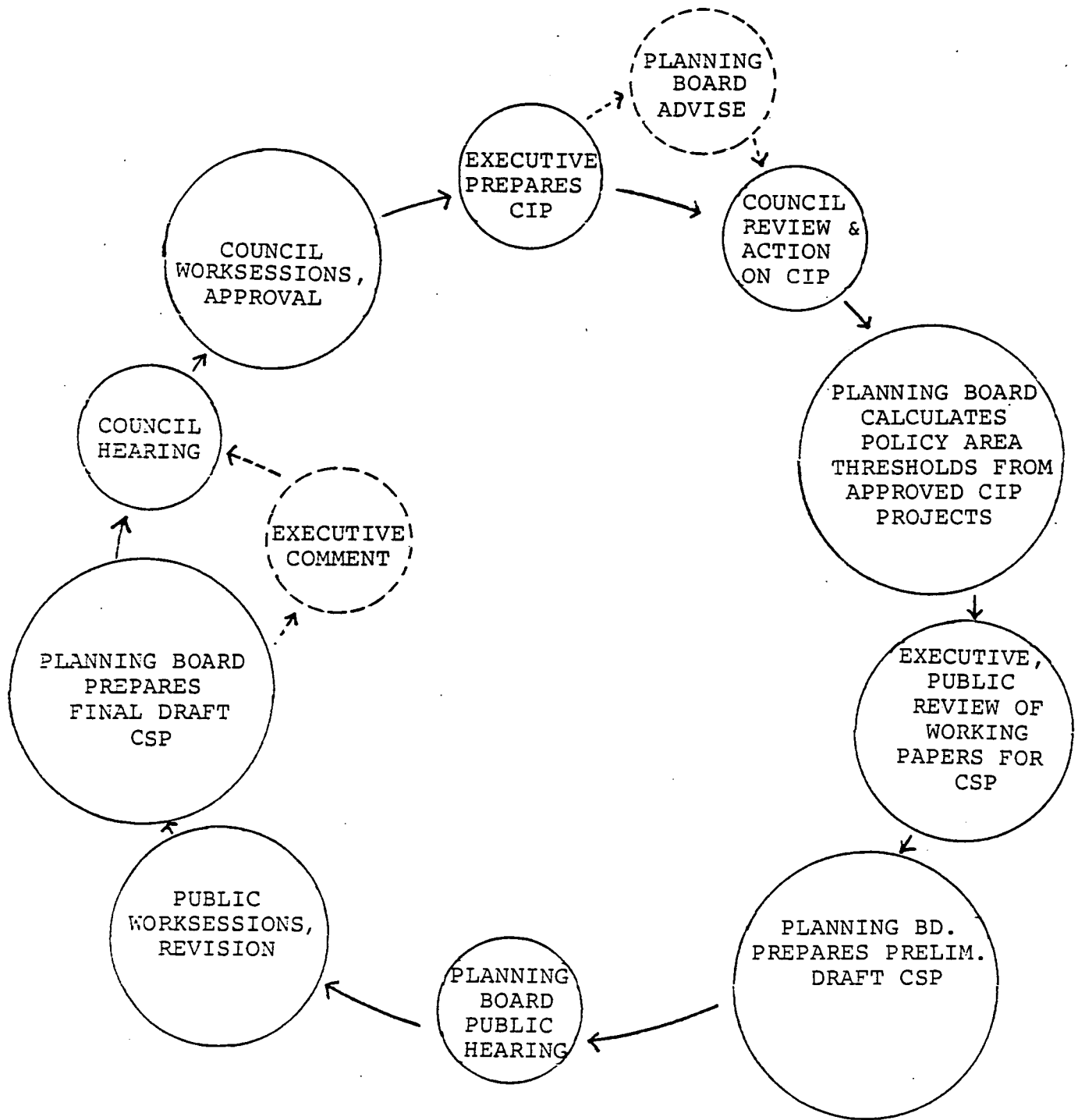
The Policy Areas

The county is not uniformly developed. Some areas contain intense development, others remain rural. Some are "built out," others are only beginning to experience growth and change. Different types of areas demand and receive different levels or even different kinds of service. Transportation, sewerage and water supply systems are the critical facilities in staging growth. In recognition of this basic fact, the CSP divides the county into policy areas. For the most part, each policy area is a coherent area with respect to sewer service and transportation service. Generally, the policy areas correspond to one or more planning areas; a few are portions of a planning area.

Each policy area is built from "traffic sheds," smaller areas within which traffic follows a predominant pattern. Each policy area combines a group of smaller traffic

FIGURE 3

THE CSP/CIP RELATIONSHIP



ACTION —————
ADVISE - - - - -

sheds that are served by a common set of major and arterial roads, over which traffic flows in a principal direction.

While the technical system used in establishing the policy areas is based on the regional transportation model long used by the Regional Transportation Planning Board to simulate regional transportation requirements, its result is similar to the "hand" technique used in the preparation of sector plans where traffic is measured at points around the perimeter of the planning area.

The sector plan method recognizes that all points will not operate at an acceptable level, but that traffic cannot be rigidly required to pass only certain points. Therefore, in calculating the amount of development that can be supported in a planning area, the unused capacity of some intersections offsets the congestion experienced at others. Thus the capacity at all points around the perimeter is averaged.

The CSP method, instead of measuring points around a perimeter, measures the capacity of each link of major and arterial roadway. By using a traffic model, it is possible to simulate the distribution of traffic generated by new development within the area and better assess its impact on congestion levels in the area.**

** The system used in administering the APF Ordinance varies from both of these approaches. It measures generated traffic against LOS D at the nearest critical intersection. It is thus more restrictive than the sector plan method.

Standards of Service for Policy Areas

Once the policy area was established on the basis of its common characteristics and transportation system, the next step was to establish an appropriate level of transportation service for it. The objective of the level of service is to ensure that the amount of traffic congestion in each policy area does not exceed limits reasonable for that area.

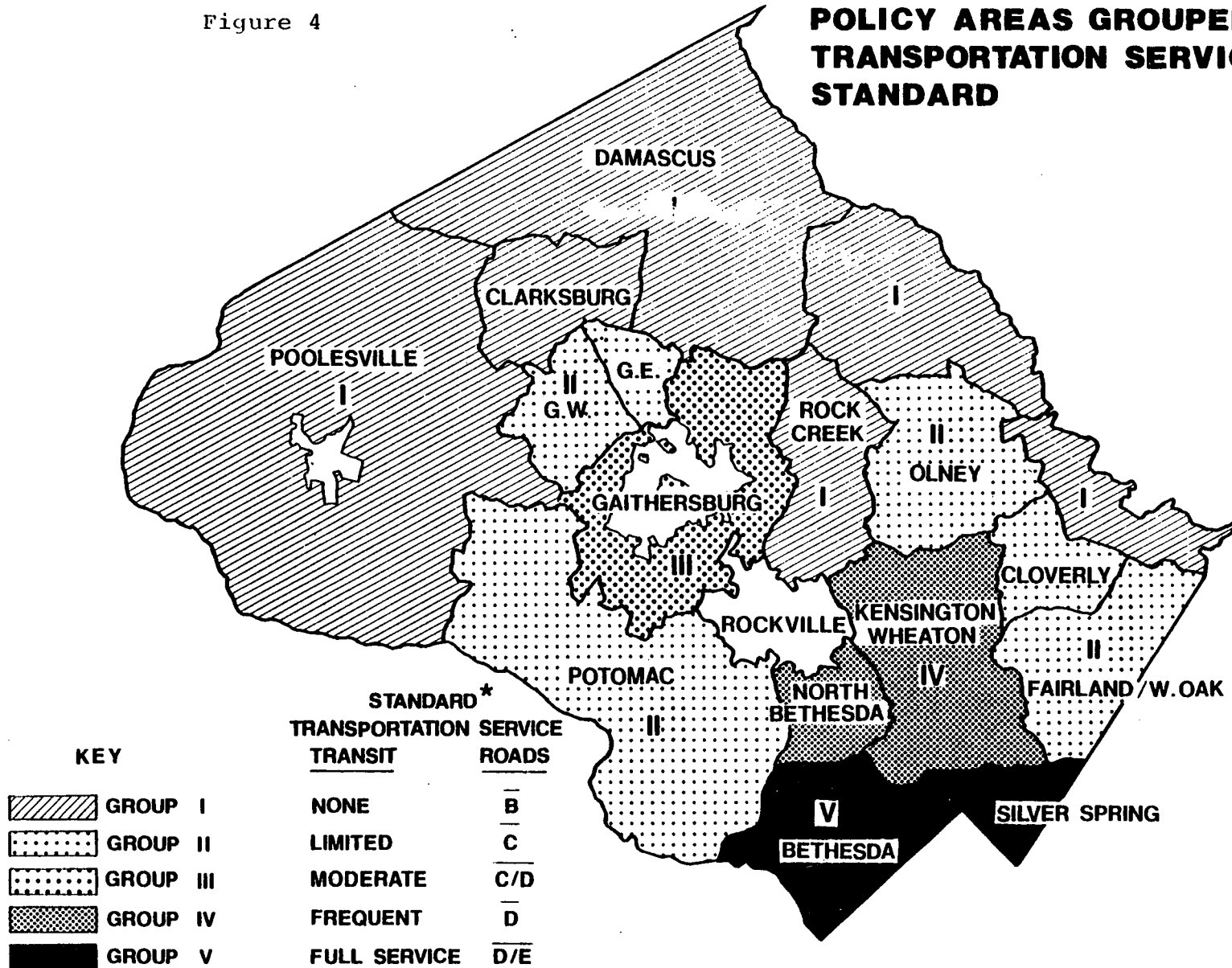
The CSP reasons that the most important factor in deciding how much traffic congestion is reasonable to expect is the extent to which people have access to alternatives to automobile travel. It seems proper to expect people to tolerate more automobile congestion if public transit is a realistic choice. Also, as a matter of public policy, it would seem unwise to plan for traffic movement in transit-served areas to be so smooth that few people will use transit as a more convenient and faster mode of travel. In addition, the sheer cost of designing road systems capable of handling urban traffic without congestion is staggering, and therefore such roads should be used to their maximum efficiency.

When all the policy areas were examined for transit availability, five groupings of them were apparent. These groupings are shown in Figure 4.

Group I includes the rural and semi-rural areas of the county. No public transportation service is available except for interstate or special bus service. Some park and ride locations are available, particularly for commuter rail patrons in the western sector of the county. For the overwhelming majority, however, the automobile is the only reliable means of transportation. Both this fact and the predominantly rural character of the area dictate that the standard of service, measured in lack of roadway congestion, should be very high. The CSP proposes that

Figure 4

POLICY AREAS GROUPED BY TRANSPORTATION SERVICE STANDARD



*FOR AN EXPLANATION OF SERVICE LEVELS, SEE APPENDIX I

all roads in Group I should operate under free-flowing conditions, using less than full road capacity. This standard accommodates statewide and interregional travel on a demand basis since these trips also cannot use transit.

Group II includes those policy areas on the "fringe" of the urbanized area. They are expected to grow more rapidly than other parts of the county, and include the Potomac region, Germantown, Olney and the eastern areas of Cloverly, White Oak and Fairland. These areas have modest levels of regional transit service which can be improved as demand increases. Commuter rail service is available at Germantown. In these areas, congestion should be kept to a minimum on the major highways. The standard of service proposed would result in less than 5 per cent of the daily traffic experiencing Level of Service E or worse, amounting to about 15 to 30 minutes of such congestion on major radial highways.

Group III includes the Gaithersburg corridor city area. Substantial development has already occurred and Metrorail service to the Shady Grove area will be available by 1983. Commuter rail service, park and ride, regional and local bus service, and some county Ride-On bus service is available. A charter service is available from Montgomery Village. Given these public transportation opportunities and the urbanizing character of an area which includes major employment and business centers, more auto congestion can be accepted. The standard of service proposed would allow up to seven percent of the daily traffic to experience LOS E or worse, amounting to 30 minutes to an hour of such congestion on the freeways and major radial highways.

Group IV consists of the North Bethesda and Kensington-Wheaton areas, located just outside the beltway. Both areas are largely urbanized, contain major employment and shopping centers and are scheduled to begin Metrorail service in 1983 and 1987,

respectively. Both have frequent regional and local Metrobus service and will experience expansion of both Metrobus and county neighborhood bus service as Metrorail operation commences. The standard of service reflects these conditions and opportunities. Up to ten percent of the daily traffic could experience LOS E or worse, with the congested period extending from thirty minutes to an hour and a half. Such congestion will affect the beltway, major radial highways, cross-county highways, such as Randolph Road, radial arterials and the intersections of major highways. In other words, improvement of existing conditions can be expected only from transit, operations improvements and some new local road construction, principally near the White Flint and Grosvenor transit stations.

Group V includes the Silver Spring and Bethesda areas inside the beltway. These are the most densely developed areas of the county and contain three important central business districts. Silver Spring has full Metro and bus service. Similar service is being introduced into Bethesda in preparation for Metro's operation in 1983. A substantial number of people in the three CBD areas are within walking distance of Metro, and many more have pedestrian access to regional and local bus service.

The standard of service proposed would tolerate up to twenty percent of the daily trips experiencing LOS E or worse. This would mean that those conditions would last from one and one-half to two and one-half hours each day (divided between the morning and evening commuter rush periods) on the beltway, major radial and arterial highways, cross-county highways, and at the intersections of such roads. Some pressure would also exist on selected streets within the central business districts. The standard is set high enough, however, to avoid serious spillover of traffic onto neighborhood streets.

The standard of service for Group V areas is designed to operate the road system close to its maximum capacity during peak periods. However, approximately 80 percent of the daily trips will travel in conditions of level of service D or better.

Table A-III summarizes the levels of service and transportation characteristics of each group of policy areas.

Determining the Thresholds: $(F \times S = T)$

Once the standard of service for each area is selected, the thresholds are established by multiplying the standard (S) by the capacity of the transportation facilities (F). The result of this mathematical exercise is the Threshold (T) for an area.

This simplified explanation of the process of arriving at the thresholds emphasizes the point made earlier. For the Executive and Council to change the threshold, they can vary either the facilities or the standard. Over time some change to both can be expected. Groups II and III, for instance, are major growth areas. Over time as transit availability increases, it may be reasonable to reclassify some parts of them into Group IV. Similarly, some areas in Group IV may someday be reclassified into Group V. Groups I and V are less likely to be reclassified as they already represent the extremes of the service standard scale, but parts of these groups could be reclassified through boundary changes of the group over time.

Recommendations Concerning Water and Sewer Service

Allocation of sewage treatment capacity no longer operates to limit growth as it did during the moratorium period, 1970-1979. Instead, the scheduling of sewerage or

water service to any area is controlled by the service area boundaries of the Ten Year Water and Sewer Plan and the construction schedule of the CIP. This will require some changes in administration of the APF concept and in preparation of annual amendments to the Ten Year Plan.

The Comprehensive Staging Plan recommends reconciliation of the boundary of sewer service categories 1-4 with the capacity of the transportation system to support development. The map in Figure 5 outlines this recommended area.

In the development of this aspect of the CSP several problems were encountered and, we believe, overcome. First, we have sought to avoid confusion between the Ten Year Plan, prepared by the Executive, and the CSP. Consequently, the Staging Plan does not use Ten Year Plan categories. They are not necessary. The map instead delineates those areas already in categories 1-4 as within Stage One, and other areas which should be considered as suitable for development within the thresholds established by the transportation standards.

Obviously, more land is included within Stage One than can be absorbed by new growth within the thresholds. This allows reasonable flexibility for the market to function in selecting specific parcels for new development.

A second aspect of the question needs to be addressed by the Executive in the next round of amendments to the Ten Year Plan and requires an amendment of the APF Ordinance. Very little land is now in Category 4. This is primarily due to the fact that, under the 1973 APF Ordinance, land must be located in Category 3 to meet the test for adequacy of service. And, since a land owner had to have an approved subdivision plan to apply for a sewer allocation under the moratorium, the usual

STAGE 1 AREAS

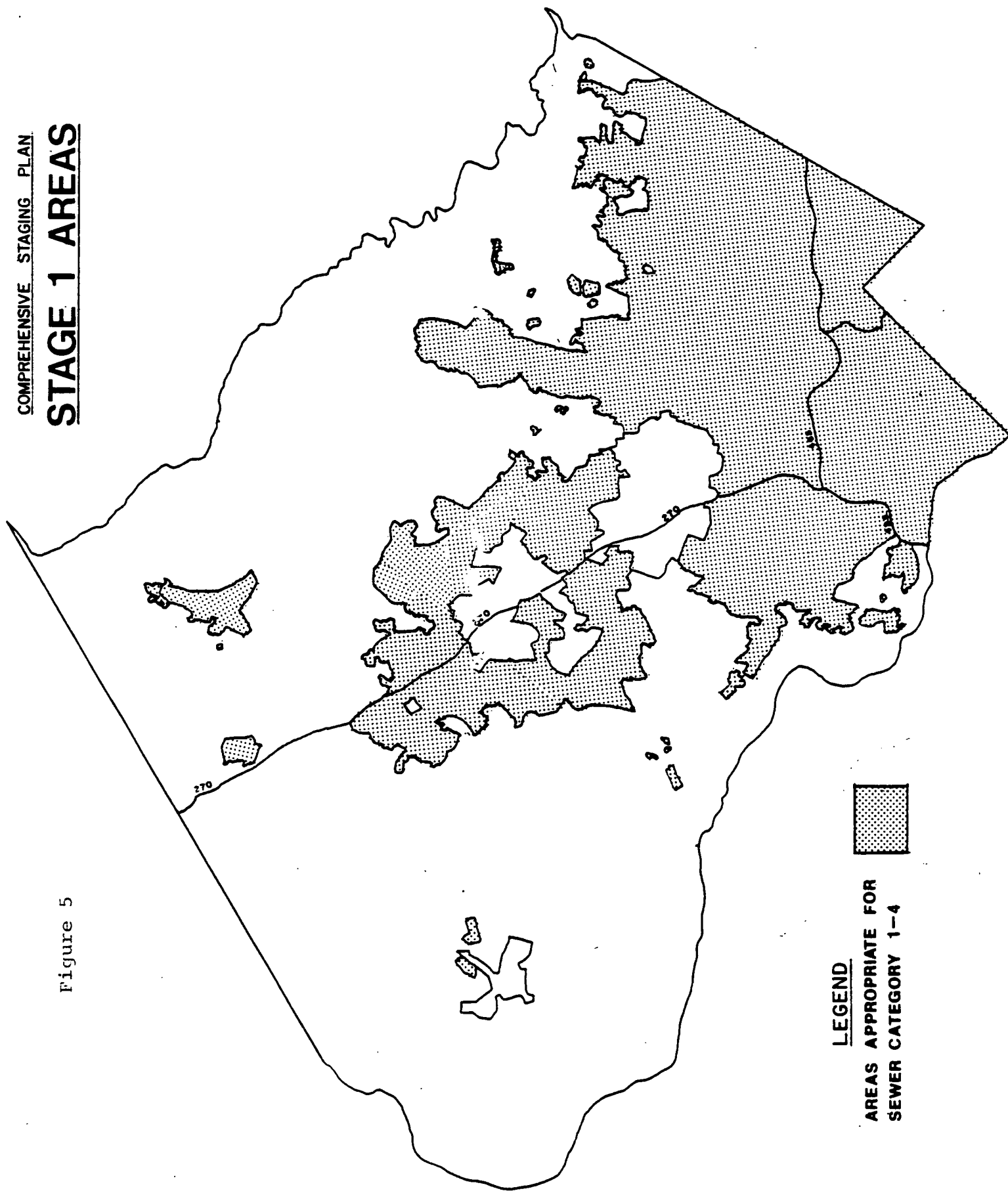


Figure 5

TABLE I
STAGING THRESHOLDS

Policy Area and Traffic Sheds	Additional Dwelling Units	Additional ^{1/} Employment
GROUP I POLICY AREAS		
Rock Creek Damascus Poolesville Patuxent Traffic Shed Clarksburg Traffic Shed	Staging determined by level of service D at nearest intersection or for other policy considera- tions.	
GROUP II POLICY AREAS		
	Stage 1 ^{2/}	Stage 1 ^{2/}
Olney	1,700	1,000
Germantown West Traffic Shed	3,000	3,500
Germantown East Traffic Shed	1,500	2,500
Cloverly Traffic Shed	1,000	500
Potomac	1,800	2,500
Fairland/White Oak Traffic Shed	6,000	6,500
GROUP III POLICY AREA		
Gaithersburg Area	15,000	22,500
GROUP IV POLICY AREAS		
North Bethesda	6,700	12,000
Kensington/Wheaton	7,400	5,000
GROUP V POLICY AREAS		
Bethesda	6,000 ^{3/}	18,000 ^{3/}
Silver Spring/Takoma Park	<u>8,400</u>	<u>18,000</u>
COUNTY TOTAL	58,500	92,000

^{1/} Employment estimates are to be determined by the Planning Board Staff based upon the proposed use and square footage of new structures.

^{2/} Stage I is the allowable number of residential dwelling units, or employment above the 1978 base period determined by the adequacy of existing transportation facilities, plus transportation projects which are programmed for 50% of construction in the current Montgomery County CIP and the Maryland Department of Transportation's Consolidated Six Year Transportation Program.

^{3/} The staging elements of the adopted Bethesda CBD Sector Plan are adopted as part of this comprehensive staging plan and are incorporated herein by reference. The Bethesda CBD Sector Plan supercedes the threshold established for the Bethesda Policy Area.

procedure was to first seek a change from Category 6 to Category 3 without going through the logical time progression envisioned by the Ten Year planning process.

The decision whether land should be in Category 3 or Category 4 is essentially a programming issue not a long range, planning problem, since Category 4 anticipates service in 3-6 years. This 6-year period, if realistic, corresponds to the CIP. Within that envelope, it is important to delineate more clearly where the WSSC expects to construct program size mains during the three year period covered by Category 3. Movement of property from Category 4 to Category 3 is therefore a programming issue for the Executive and WSSC if, as is recommended, the APF ordinance is amended to allow the Planning Board to approve preliminary plans of subdivision in Category 4.

POLICY AREA THRESHOLDS

The tables, maps, and charts which follow identify specific policy areas and the thresholds for housing or employment resulting from the FY 1980 CIP and current SHA program. Municipalities which have independent planning and zoning powers, such as Rockville and Gaithersburg, are excluded from this plan. Table I provides a summary, by the five transportation service groups.

Following Table I, each policy area is represented by two staging charts showing ultimate development capacity (ceiling), the staging thresholds and the forecasts. Accompanying the staging charts are tables which indicate transportation facilities which have 50 percent of their construction costs included in the adopted CIP or State programs. Table II lists, together with costs in 1979 dollars, the remaining roads recommended by adopted master plans to serve the policy area. This table is included

Table II

CANDIDATE PROJECTS FOR INCREASING THRESHOLDS BY STAGING AREAS

GAINERSBURG TRAFFIC SHEDS

<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
MD RT. 28 RELOCATED	S	\$8,240,000 ^{7/}	I-270 TO MUDDY BRANCH RD.
MD RT. 28 WIDENING	S	\$8,820,000 ^{7/}	MUDDY BRANCH RD. TO QUINCE ORCHARD RD.
SHADY GROVE RD.	C	\$500,000 ^{2/}	MD RT. 28 TO I-270
MUDDY BRANCH RD.	C	\$7,213,000	MD RT. 28 TO WEST DIAMOND AVE.
I-370 CONNECTOR	S	\$19,670,000	I-270 TO SHADY GROVE METRO STATION
EASTERN ART. ^{9/}	S	\$26,911,000	MONT. VILLAGE AVE. TO NORBECK/MD RT. 28
MD RT. 355	S	\$6,820,000	SOUTH SUMMIT AVE. TO BROOKS AVE.
MD RT. 124 RELOCATED	S	\$3,520,000	MONT. VILLAGE AVE. TO GOSHEN ROAD
I-270 WIDENING & INTERCHANGES	S	\$81,000,000 ^{6/}	I-270 SPUR TO MONT. VILLAGE AVE.
INTERCOUNTY CONNECTOR	S	\$80,000,000 ^{6/}	GREAT SENECA HWY. TO ROCKVILLE FACILITY
MUDDY BRANCH RD. WIDENING	C	\$1,300,000	MD RT. 28 TO WEST DIAMOND AVE.
FIELDS ROAD	C	\$3,145,000	MUDDY BRANCH RD. TO SHADY GROVE RD.
QUINCE ORCHARD	S	\$6,930,000 ^{7/}	MD RT. 28 TO CLOPPER RD.
WEST DIAMOND AVE.	S	\$5,180,000 ^{7/}	QUINCE ORCHARD ROAD TO MD RT. 355

GERMANTOWN EAST TRAFFIC SHED

<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
MD ROUTE 118	S	\$10,980,000 ^{1/}	I-270 TO MD RT. 355
I-270 WIDENING	S	\$10,000,000 ^{2/}	MONTGOMERY VILLAGE TO MD RT. 118
MD ROUTE 355	S	\$15,670,000 ^{1/}	MONTGOMERY VILLAGE TO MD RT. 27

GERMANTOWN WEST TRAFFIC SHED

<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
MD ROUTE 118	S	\$10,980,000 ^{5/}	RIFFLEFORD RD. TO I-270

NORTH BETHESDA

<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
TWINBROOK PKWY.	C	\$1,500,000 ^{2/}	MD RT. 355 TO PARKLAWN AND ARDENNES TO VEIRS MILL RD.
ROCKVILLE FACILITY	S	\$95,000,000 ^{6/}	I-270 TO INTERCOUNTY CONNECTOR
ASPEN HILL RD. EXTENDED	C	\$1,750,000 ^{2/}	VEIRS MILL RD. TO TWINBROOK PARKWAY
TUCKERMAN LANE	C	\$1,700,000 ^{2/}	SEVEN LOCKS RD. TO OLD GEORGETOWN RD.
RITCHIE PARKWAY	CITY	\$3,850,000	MD RT. 28 TO VEIRS MILL RD.
I-270 WIDENING INCLUDING INTERCHANGES	S	\$81,000,000 ^{6/}	I-270 SPUR TO MONT. VILLAGE AVE.
GADE DRIVE WIDENING	C	\$960,000 ^{2/}	MD RT. 355 TO PICCARD DRIVE

Table II continued

BETHESDA			
<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
FULL SERVICE BY BUS TRANSIT FEEDER/CIRCULATION SYSTEM			
I-495 INCLUDING CABIN JOHN BRIDGE	S	\$10,992,000	CABIN JOHN BRIDGE TO RIVER ROAD
WOODMONT AVE. EXTENDED	C	\$5,773,000	MONTGOMERY LANE TO LELAND STREET

POTOMAC			
<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
MONTROSE ROAD EXTENDED	C	\$2,339,000 ^{8/}	I-270 TO FALLS RD.
DEMOCRACY BLVD. EXTENDED	C	\$2,159,000 ^{8/}	SEVEN LOCKS RD. TO KENTSDALE RD.

SILVER SPRING/TAKOMA PARK			
<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
BONIFANT ST. ^{12/}	C	\$1,071,000	RAMSEY AVE. TO GEORGIA AVE.

KENSINGTON/WHEATON			
<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
LAYHILL ROAD	S	\$8,410,000	GEORGIA AVE. TO ARGYLE CLUB ROAD
TRANSIT STATION ACCESS PROJECTS	C/S	\$1,865,000	
INTERCOUNTY CONNECTOR	S	\$80,000,000 ^{6/}	ROCKVILLE FACILITY TO GREAT SENECA HIGHWAY
ROCKVILLE FACILITY	S	\$95,000,000 ^{6/}	I-270 TO INTERCOUNTY CONNECTOR
U.S. 29 SPUR	S	\$3,000,000 ^{10/}	UNIVERSITY BLVD TO U.S. 29

OLNEY			
<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
MD RT. 97 (GEORGIA AVE.)	S	\$10,072,000 ^{7/}	NORBECK RD. TO MD RT. 108
INTERCOUNTY CONNECTOR	S	\$80,000,000 ^{6/}	ROCKVILLE FACILITY TO GREAT SENECA HIGHWAY

CLOVERLY TRAFFIC SHED			
<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
MD RT. 650 (NEW HAMPSHIRE AVENUE)	S	\$5,090,000 ^{7/}	RANDOLPH ROAD TO MD 198

FAIRLAND/WHITE OAK TRAFFIC SHED			
<u>ROADWAY</u>	<u>STATE OR COUNTY</u>	<u>ESTIMATED COSTS</u>	<u>LIMITS</u>
U.S. 29 WIDENING	S	\$7,500,000	NEW HAMPSHIRE AVE. TO MD RT. 198
U.S. 29 SPUR	S	\$3,000,000 ^{11/}	NEW HAMPSHIRE AVE. TO UNIVERSITY BLVD.
INTERCOUNTY CONNECTOR	S	\$67,000,000 ^{6/}	ROCKVILLE FACILITY TO I-95
RANDOLPH ROAD	C	\$1,600,000 ^{2/}	NEW HAMPSHIRE AVE. TO OLD COL. PIKE
FAIRLAND ROAD	C	\$3,800,000 ^{2/}	RANDOLPH ROAD TO U.S. 29

TRANSIT IMPROVEMENTS

FOOTNOTES

1/ SOURCE: MONTGOMERY COUNTY CRITICAL HIGHWAY NEEDS (1979-1998) FOR SECONDARY SYSTEM BY MD DOT. COST FOR MD ROUTE 118 INCLUDES SECTION OF ROAD IN GERMANTOWN WEST TRAFFIC SHED.

2/ M-NCPPC STAFF ESTIMATE

3/ INCLUDED IN CURRENT COUNTY OR STATE PROGRAM FOR CONSTRUCTION.

4/ SOURCE: MONTGOMERY COUNTY CIP COST INCLUDES SECTION OF ROAD IN TRAVILAH/DARNESTOWN TRAFFIC SHED.

5/ SOURCE: MONTGOMERY COUNTY CRITICAL HIGHWAY NEEDS (1979-1998) FOR SECONDARY SYSTEM BY MD DOT. COST INCLUDES SECTION OF ROAD IN GERMANTOWN EAST TRAFFIC SHED.

6/ TOTAL PROJECT COST

34 7/ SOURCE: MONTGOMERY COUNTY CRITICAL HIGHWAY NEEDS (1979-1998) FOR SECONDARY SYSTEM BY MD DOT.

8/ M-NCPPC STAFF ESTIMATES BASED ON UNIT COST ESTIMATES PROVIDED MCDOT AND CONTAINED IN STAFF DRAFT OF POTOMAC SUBREGION MASTER PLAN.

9/ 2 LANE SECTION FROM MONTGOMERY VILLAGE AVENUE TO SHADY GROVE ROAD IN COUNTY CIP FOR CONSTRUCTION.

10/ INCLUDES COST FOR SECTION IN COLESVILLE POLICY AREA.

11/ INCLUDES COST FOR SECTION IN KENSINGTON-WHEATON POLICY AREA.

12/ PROJECT IN PROGRAM FOR EITHER SAFETY, ALIGNMENT OR LOCAL CIRCULATION: NO INCREASE IN AREA CAPACITY.

for information purposes only and has not been used in calculating thresholds. It is available for reference and, in some cases where the amount of development already in the pipeline approaches or exceeds the threshold, recommendations may be made for specific projects to be included in the next CIP.

The two charts for each policy area contain other information. The line across each chart shows the ceiling for residential or employment development respectively of the area, as established or recommended by the master plans. This represents the maximum "holding capacity" of the area as envisioned by adopted master plans.

The second horizontal line shows the Stage One threshold for the policy area. This represents the number of additional units of housing or the number of new jobs above the number existing in FY 1979, which could be served adequately by programmed roads.

The third horizontal line represents the number of those additional units which are already in the development pipeline: the number which have received sewer authorization from the WSSC and must be counted against the threshold. In most areas, this number is less than the threshold. In the areas where it exceeds the threshold, no new subdivisions should be approved until additional facilities are programmed or until the Council changes the threshold levels.

The other three lines on each chart show the Planning Board's forecast for housing and employment for each area based on three alternative rates of growth - high, intermediate, and low. These lines help policy makers assess when the Stage One threshold for an area may be reached and when it will be necessary to program additional facilities if growth is to continue.

new to draft

The thresholds for housing units and jobs shown on the charts are not cumulative, but off-setting. The numbers shown indicate the totals that could occur if only that type of development occurred. Since the numbers are derived from traffic capacity, each unit of housing developed displaces the number of jobs which would use the same amount of traffic capacity, and vice-versa.

Jobs, rather than square feet of floor space, were used as a measurement of non-residential growth. In most cases, jobs are the generator of traffic and sewage treatment demand. The important exception is retail space. Commercial and Industrial Zones, however, allow a wide variety of uses. Some produce few jobs and trips. Others produce many. Secondly, jobs produce more difficult traffic patterns than homes built in the same area. If we are to simulate future traffic more reliably, jobs are a better measure to use. The requirement that the local impact of each development proposal be reviewed allows the traffic generating retail or other high trip users to be taken into account.

The number of employees produced by development is estimated on the basis of the floor area and intended use of the planned structures. Unless the development is unique in some manner, statistical averages are used for the three major land use categories; office (200 square foot per employee) retail (400 square foot per employee) industrial (450 square foot per employee). "Other" types of land use ranging from nursing homes to indoor racket ball courts have a wide variance in the number of employees per square foot. An average of 500 square foot per employee is used for this other category unless more specific information is available.

GROUP I POLICY AREAS

- Rock Creek
- Damascus
- Poolesville
- Patuxent
- Clarksburg

Group I Policy areas encompass the rural and low density wedges including most of the Patuxent watershed. The entire area is essentially rural in character. The policy of preserving the rural quality of these areas is in conformance with the General Plan. It is consistent with the purpose of the General Plan "to provide a favorable rural environment in which farming, mineral extraction, hunting, fishing and other natural resource activities can be carried on without disruption."

The Comprehensive Staging Plan reinforces the goal of maintaining the rural and agricultural character of these areas in three ways:

1. With the single exception of Clarksburg and parts of the Damascus area already sewered, Group I policy areas are not recommended for public sewer service within the next 20 years.
2. The APF test will ensure that subdivisions will be approved only if the nearest critical intersection will not exceed level of service D.
3. There are no recommended transportation improvements to add to the existing capacity of the transportation system.

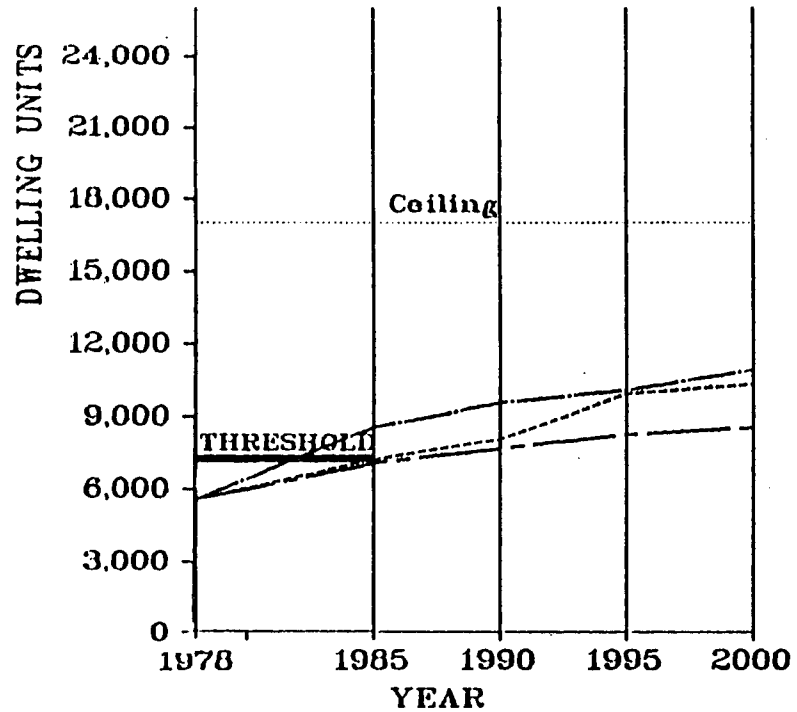
Population densities are far too low to support public transit. Exurban commuters have the opportunity to drive to bus or metro lines if they so desire, but the area is essentially automobile dependent. The low densities spread traffic relatively evenly over the entire area, hence, there are no significant congestion problems. Due to other policy decisions in the area, transportation is not likely to be the most constraining factor in the Group I area.

Areas Appropriate for Subdivisions Using Public Sewer

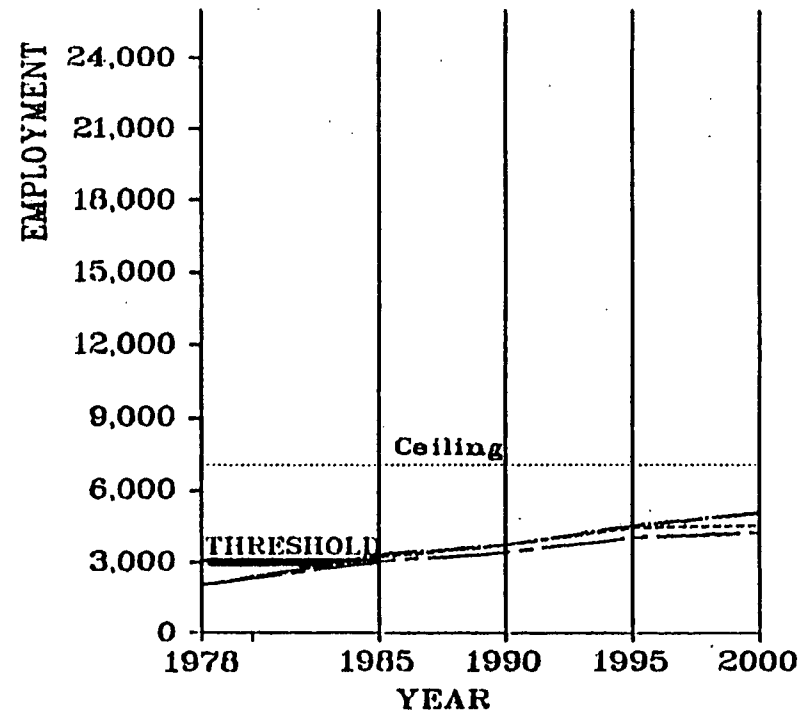
Clarksburg is unique within the Group I area. The General Plan suggests that it could become another corridor city after Germantown develops. When that occurs, its status as a Group I area would change. While the CSP, which is based upon currently approved facilities does not recommend development on sewer during the period it covers, it is likely that half of the area should be placed in a category which will permit public sewer subdivision applications within 10 to 20 years.

The other Group one areas should retain their current sewer category status.

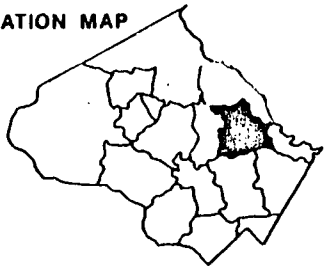
OLNEY POLICY AREA



OLNEY POLICY AREA



LOCATION MAP



OLNEY POLICY AREA

STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
I	MD RT. 97/108	S	\$4,741,000	N/A

OLNEY

Transit Availability

The Olney area is currently served by regional bus lines on Georgia Avenue, New Hampshire Avenue and Route 108. This service is to be augmented before 1985.

Critical Intersections

For the past several years, severe congestion at Norbeck Road and Georgia Avenue has been of critical importance to development in Olney. Projects now underway to reconstruct that intersection will considerably improve traffic flow through this bottleneck.

Policy Issues

The Final Draft Olney Master Plan proposes that development rights be transferred from the area north of Olney to areas around the town center. From a traffic engineering standpoint, the effect of the transfer would neither add to nor subtract from the overall roadway capacity.

Relationship of the Development Pipeline to the Threshold

Given the number of sewer authorizations, approved Subdivisions in Olney are very close to reaching the Stage 1 threshold. There has been extensive developer interest in this area; but little actual construction in the past several years. Increasing road capacity in the area hinges on the widening of Georgia Avenue. This project is in the Maryland DOT's five year program for project planning, but construction funds have not been programmed.

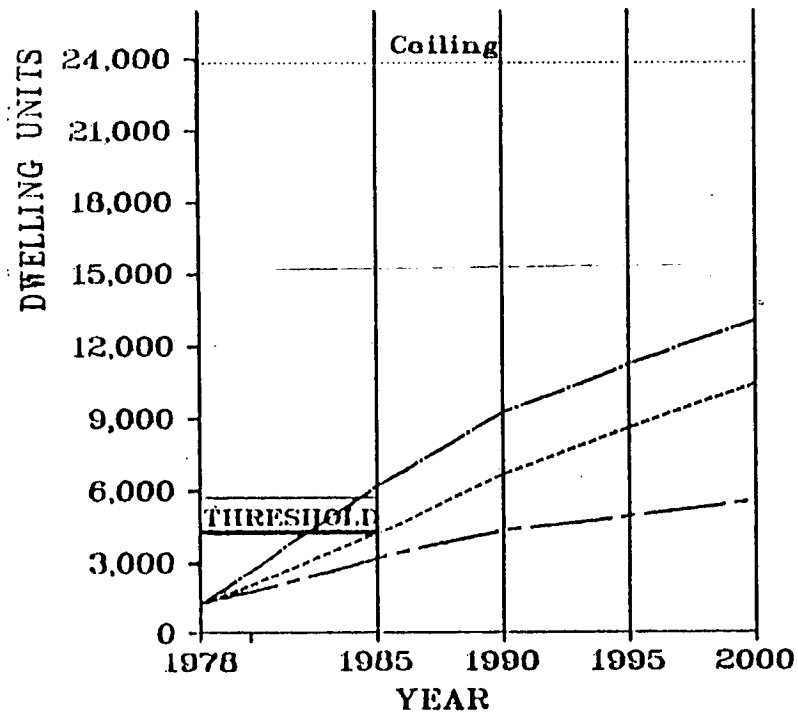
APF Problems

Under the current APF, more subdivisions could be approved than under the proposed CSP. This is principally because many of the subdivisions which have sewer authorizations have not been recorded. In addition, the current system allows small scattered subdivisions that do not individually have a statistical impact on critical intersections.

Areas Appropriate for Subdivisions Using Public Sewer

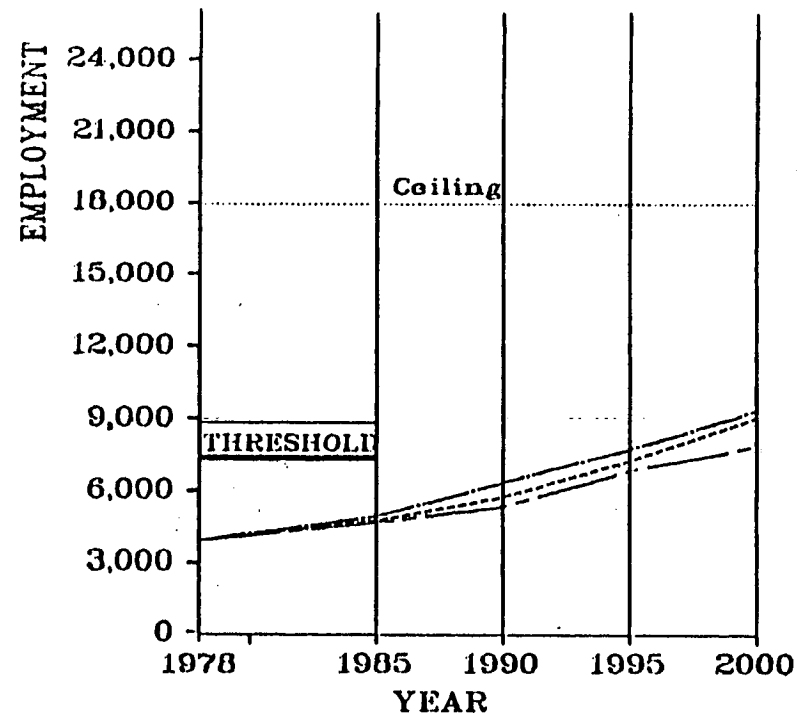
The Olney Master Plan proposes that sewer service be extended to property owners in the TDR receiving area after they have acquired development rights from the agricultural area.

I-270 POLICY AREA GERMANTOWN WEST



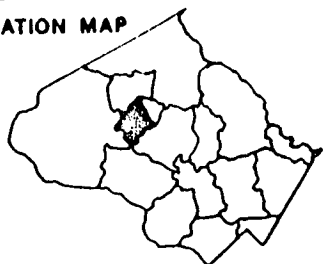
- = Threshold (3,000)
- = Pipeline (4,475)
- - - = Low Growth
- · · = Intermediate Growth
- · — = High Growth

I-270 POLICY AREA GERMANTOWN WEST



- = Threshold (3,500)
- = Pipeline (5,000)
- - - = Low Growth
- · · = Intermediate Growth
- · — = High Growth

LOCATION MAP



GERMANTOWN WEST TRAFFIC SHED

STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
I	GREAT SENECA HIGHWAY	C	\$20,067,000	MIDDLEBROOK RD. TO MD RT. 28

GERMANTOWN WEST

Transit Availability

Germantown West should be served by regional bus services before 1985. A route extension of the McDOT Ride-On Community Bus Service in Gaithersburg is programmed as well as improvements to the Germantown Commuter Rail Station.

Critical Intersections

Development which is now
There will be a problem at the intersection of Route 118 and Aircraft Drive and Route 118 and Middlebrook Road if recorded ~~plans~~ are developed. This link is critical to the area's development.

Policy Issues

A recent master plan amendment recommended changes in sewer categories. This area will benefit by the decision to include the Great Seneca Highway in the CIP.

Relationship of the Development Pipeline to the Threshold

The development pipeline now exceeds the threshold for the area. Thus, the CSP will deny approval of additional preliminary plans until such time as the link on Route 118 between Aircraft Drive and Middlebrook Road is programmed for construction. While such a project is in the MdDOT program for project planning, the programming of construction funds does not appear to be imminent. This facility could be completed with private contributions.

APF Problems

Under current APF procedures, subdivision approval would be denied to projects which would directly impact the intersection of Route 118 and Aircraft Drive or the intersection of Route 118 and Middlebrook Road.

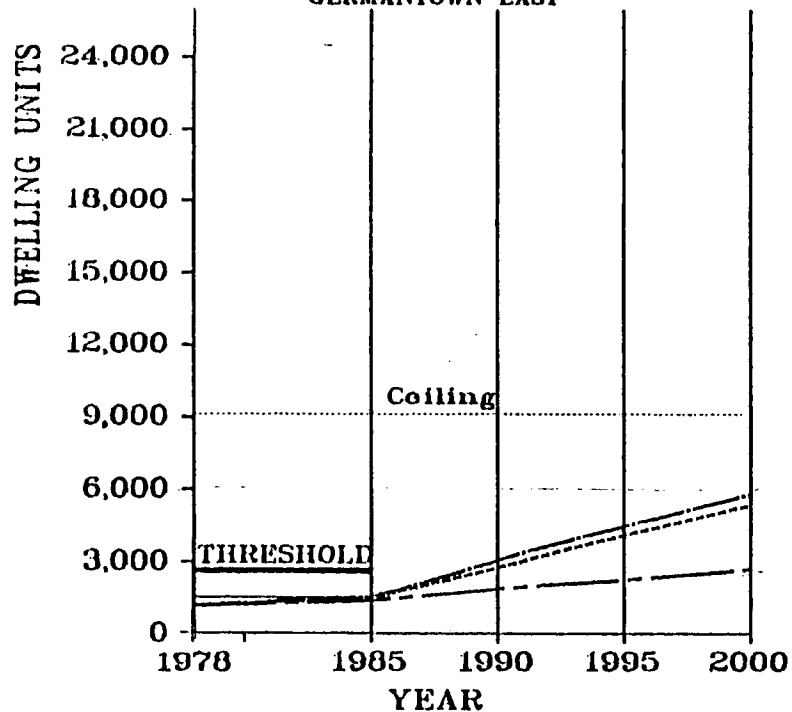
Areas Appropriate for Subdivisions Using Public Sewer

The areas appropriate for development using public sewer conform to the recent amendments to the Germantown Master Plan.

Eventually the entire area will be appropriate for public sewer service.

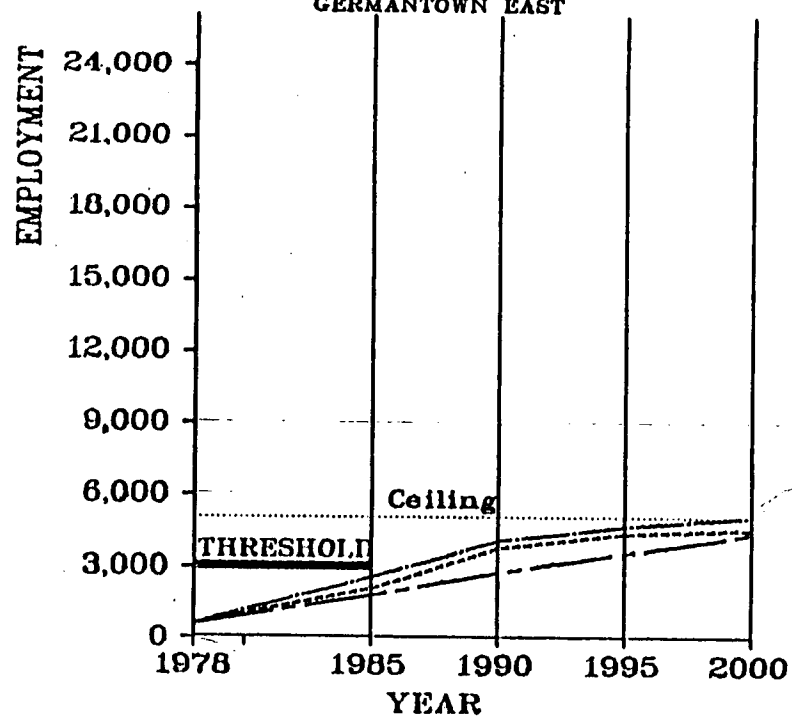
I-270 POLICY AREA

GERMANTOWN EAST

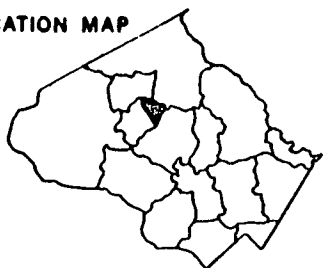


I-270 POLICY AREA

GERMANTOWN EAST



LOCATION MAP



GERMANTOWN EAST

Transit Availability

Regional bus service should reach the Germantown East area before 1985. A route extension of McDOT Ride-On Community Bus Service in Gaithersburg is programmed to serve this area.

Critical Intersections

There are potential intersection problems at 355 and Blunt Road since there are a large number of preliminary plans in the immediate area.

Policy Issues

The area was recently the subject of a master plan amendment which recommended changes in sewer categories but had no effect on transportation capacity.

Relationship of the Development Pipeline to the Threshold

In terms of residential development, the threshold for this area is well above the number of sewer authorizations. Non-residential development however, is within 200 employees of the threshold. Most of this capacity has already been absorbed by large employers.

APF Problems

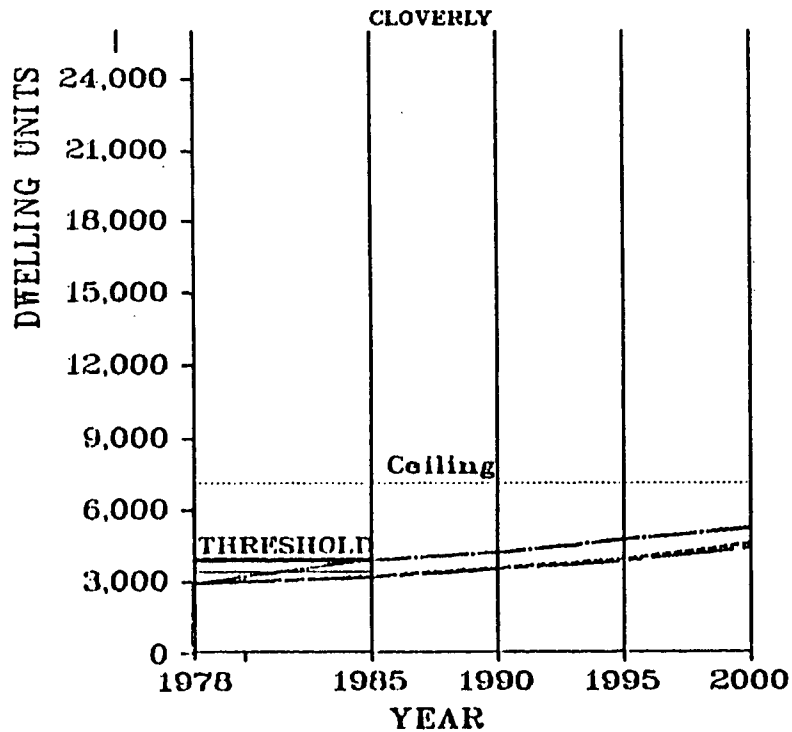
As noted, there are potential APF problems near the 355 and Blunt Road intersection.

Areas Appropriate for Subdivisions Using Public Sewer

The areas appropriate for applications of subdivisions using public sewer conform to the recent amendment to the Germantown Master Plan.

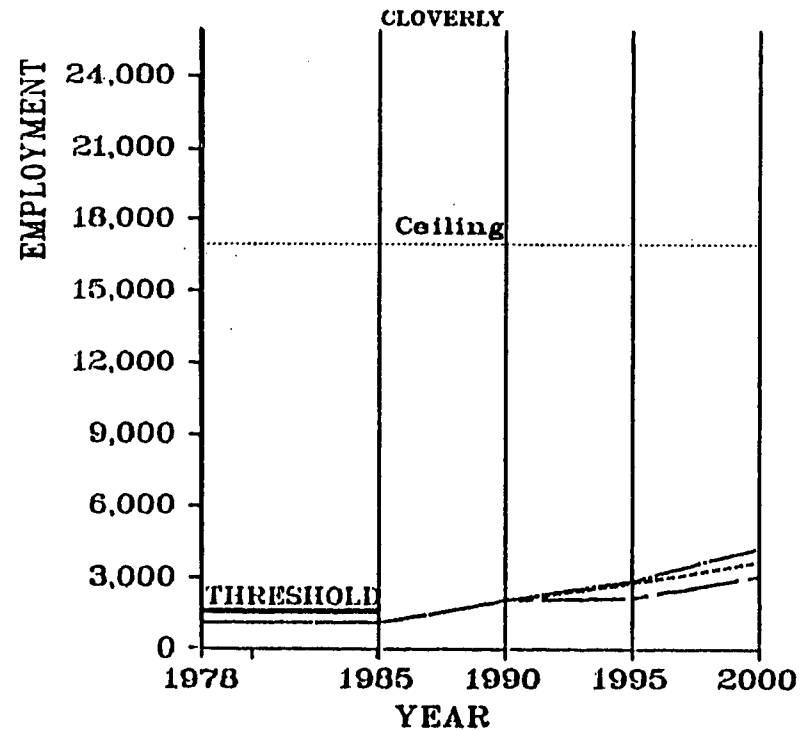
Eventually the entire Germantown area will be appropriate for public sewer service.

COLESVILLE POLICY AREA



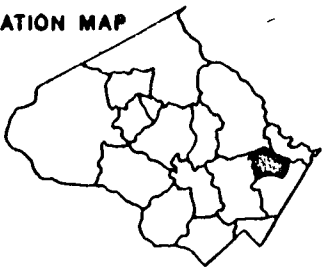
- = Threshold (1,000)
- = Pipeline (476)
- = Low Growth
- = Intermediate Growth
- . - . - = High Growth

COLESVILLE POLICY AREA



- = Threshold (500)
- = Pipeline (10)
- = Low Growth
- = Intermediate Growth
- . - . - = High Growth

LOCATION MAP



CLOVERLY TRAFFIC SHED

STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
I	BONIFANT ROAD	C	\$3,471,000	LAYHILL RD. TO NEW HAMPSHIRE AVENUE
	GOOD HOPE ROAD REALIGNMENT	C	\$729,000	TO NEW HAMPSHIRE AVE. AND NEW BONIFANT RD.

CLOVERLY

Transit Access

This area is currently served by the regional bus service along New Hampshire Avenue.

Critical Intersections

There ~~are~~^{are} intersections in this area operating at level of service E or ~~worse~~^{worse}.

Policy Issues

The Cloverly Master Plan is under review. Much of the area is environmentally sensitive. It includes the head waters of Northwest Branch and Paint Branch, which encompasses a breeding area for brown trout, a unique situation for a suburban area. Growth in this area potentially endangers the rural life style of the Northern part of the area. There have been a substantial number of preliminary plans approved in the area in conformity with existing plans.

Relationship of the Development Pipeline to the Threshold

The Stage I threshold would allow 1,000 more units than now exists. Just under 500 have approved sewer authorizations.

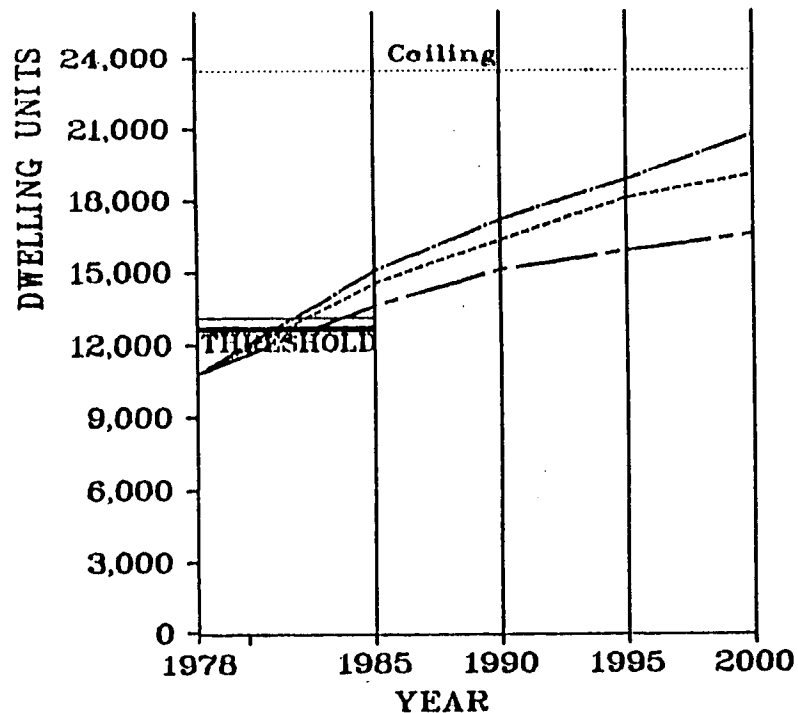
APF Problems

Proposed development surrounding the intersection of New Hampshire Avenue, Bonifant Road and Good Hope Road may present problems under APF. The recording of previously approved preliminary plans would be the triggering factor.

Areas Appropriate for Subdivisions Using Public Sewer

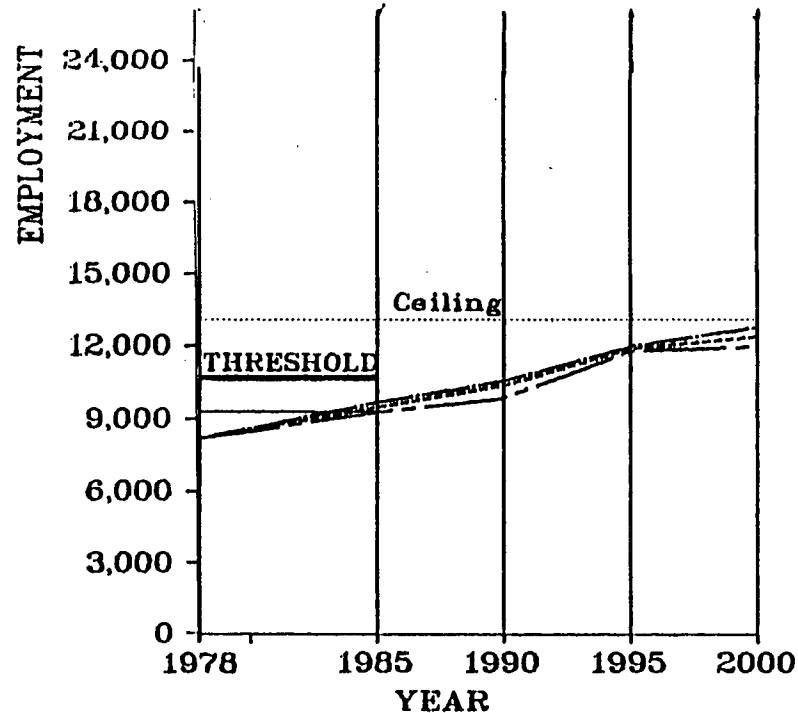
In view of their environmental sensitivity development should be discouraged in the areas tributary to Northwest Branch and Paint Branch. The CSP, therefore, recommends excluding these areas from the sewer envelope for the immediate future.

POTOMAC POLICY AREA



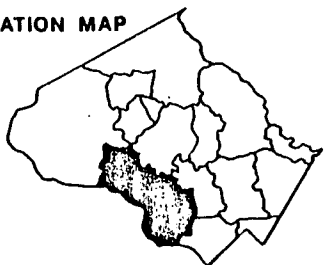
- = Threshold (1,800) / 100
- = Pipeline (2,284)
- - = Low Growth
- ... = Intermediate Growth
- . - = High Growth

POTOMAC POLICY AREA



- = Threshold (2,500) / 800
- = Pipeline (1,100)
- - = Low Growth
- ... = Intermediate Growth
- . - = High Growth

LOCATION MAP



POTOMAC POLICY AREA

STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
I	SEVEN LOCKS RD. RESURFACING & REALIGNMENT PROJECTS	C	\$2,542,000	BRADLEY BLVD. TO MONTROSE RD. AND MACARTHUR BLVD. TO GREENTWIG RD.

POTOMAC

Transit Availability

Potomac is currently served by the regional bus system on parts of Seven Locks Road, Falls Road River Road and Bradley Boulevard. These services will be improved before 1985. In addition, fringe parking is available at Montgomery Mall.

Critical Intersections

The only congested intersections in the area are along Seven Locks Road. These problems will be addressed by projects already in the CIP.

Policy Issues

The Master Plan maintains the transportation network at its present size and configuration and accepts a lower level of transportation service. The threshold for Stage I equals the 1985 forecast for the area. After Montrose Road and Democracy Boulevard have been programmed for construction, the threshold should be set at the zoning ceiling.

While it is recognized that such a change in the threshold would cause the level of service to go beyond that which is recommended for a Group II Staging Area, from a County-wide policy perspective, such an approach is acceptable. Traffic is unique in this area in that it does not adversely affect traveler needs beyond the immediate area. This policy does not adversely affect the long term development of the area and is consistent with the local desires.

Relationship of the Development Pipeline to the Threshold

There are more approved subdivisions in the Potomac area than would be permitted under the threshold because many small subdivisions, each with a few lots, have been approved. The number of outstanding sewer authorizations exceed the threshold for this area. The CSP would stop the approval of new preliminary plans, until the needed roads are programmed. However, there are now enough approved residential units to satisfy 5 years of development at recent rates of home building in the Potomac area.

APF Problems

Under existing APF procedures, subdivisions in Potomac would most likely continue to be approved because of their limited size and scattered pattern throughout the area; each subdivision has a small effect on the nearest critical intersection.

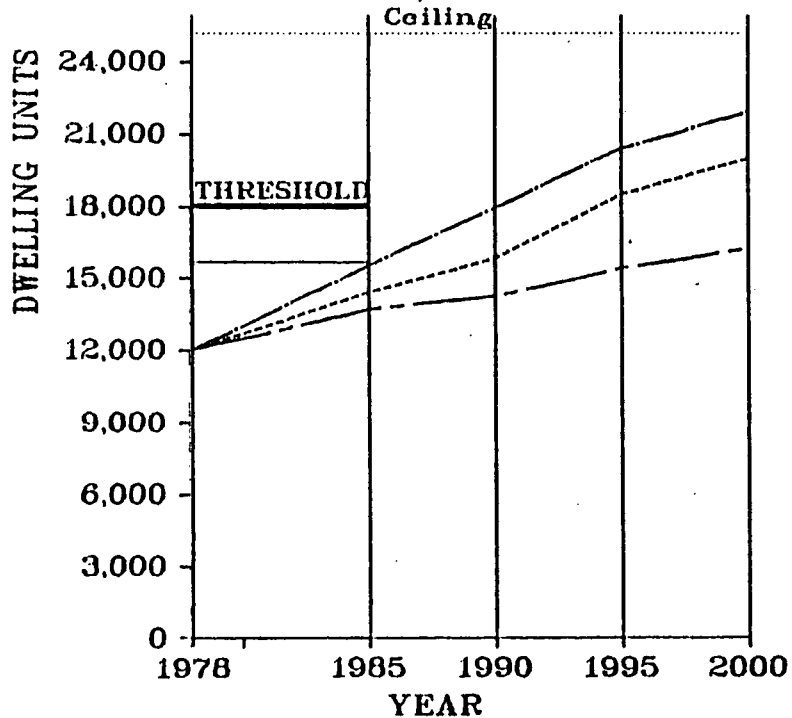
Areas Appropriate for Subdivisions Using Public Sewer

Given the current CIP and development pipeline, no changes are recommended in the present configuration of sewer categories 1, 2 and 3.

Beyond the time frame of CSP and consistent with the Potomac Master Plan it is recommended that cluster development south of River Road be permitted to use public sewer. As a second priority, the land east of Brickyard Road could be permitted the same privilege.

COLESVILLE POLICY AREA

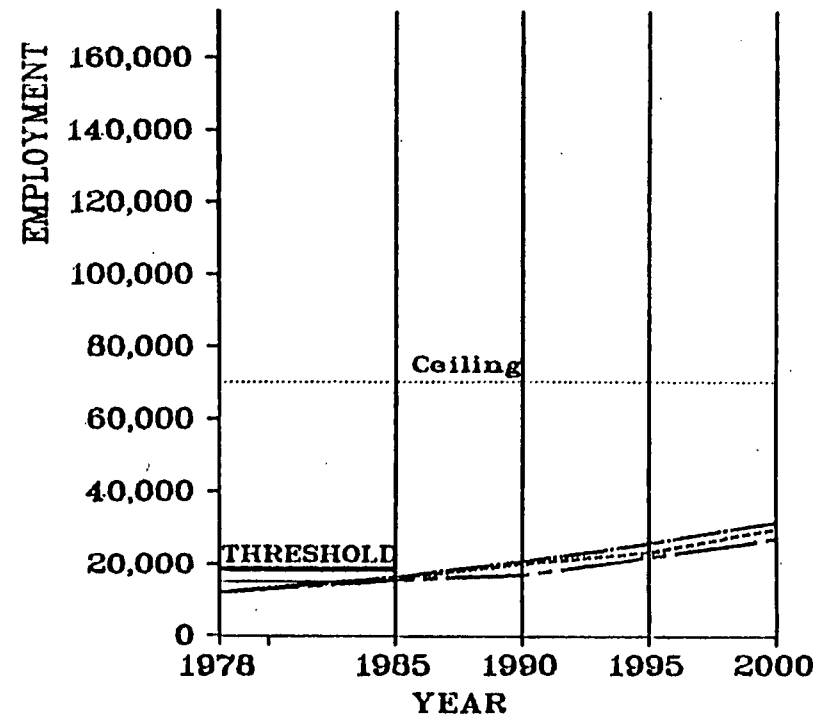
FAIRLAND/WHITE OAK



- = Threshold (18,000)
- - - = Pipeline (15,638)
- - - = Low Growth
- = Intermediate Growth
- = High Growth

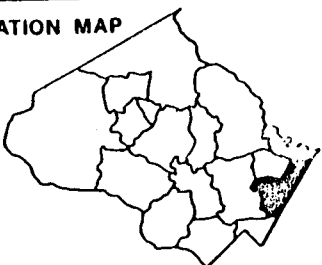
COLESVILLE POLICY AREA

FAIRLAND/WHITE OAK



- = Threshold (20,000)
- - - = Pipeline (18,000)
- - - = Low Growth
- = Intermediate Growth
- = High Growth

LOCATION MAP



FAIRLAND/WHITE OAK TRAFFIC SHEDS

STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
I	RANDOLPH RD. EAST	C	\$3,039,000	U.S. 29 TO PRINCE GEORGE'S LINE
	MD RT. 198 (SANDY SPRING RD.)	S	\$5,300,000	OLD COLUMBIA PIKE TO I-95

FAIRLAND/WHITE OAK

Transit Access

The area is presently served by regional bus service along Route 29, New Hampshire Avenue, Fairland Road and across Randolph Road. McDOT Ride-On Community bus service is programmed for the West Hillandale area. The concept of light rail is under discussion in the staff draft of the area's master plan.

Critical Intersections

The transportation spine of this area is Route 29. Several of the intersections along 29 are operating at LOS E. New Hampshire Avenue is the major north/south artery in the White Oak part of the area. There are a few intersections on New Hampshire Avenue which are operating at LOS E.

Policy Issues

Route 29 is a heavily used primary state highway. Much of the traffic has its origin and destination outside of Montgomery County. Development in Howard County uses an increasingly significant portion of the total roadway capacity. As a matter of policy, it makes little sense to curtail development within Montgomery County to prevent unacceptable congestion if that congestion would occur, in any event, by forces outside of the County's control.

Relationship of the Development Pipeline to the Threshold

Sewer authorizations could increase by almost 2,400 dwelling units. Sewer authorizations sufficient for more than 3,500 additional jobs may proceed under the CSP threshold.

APF Problems

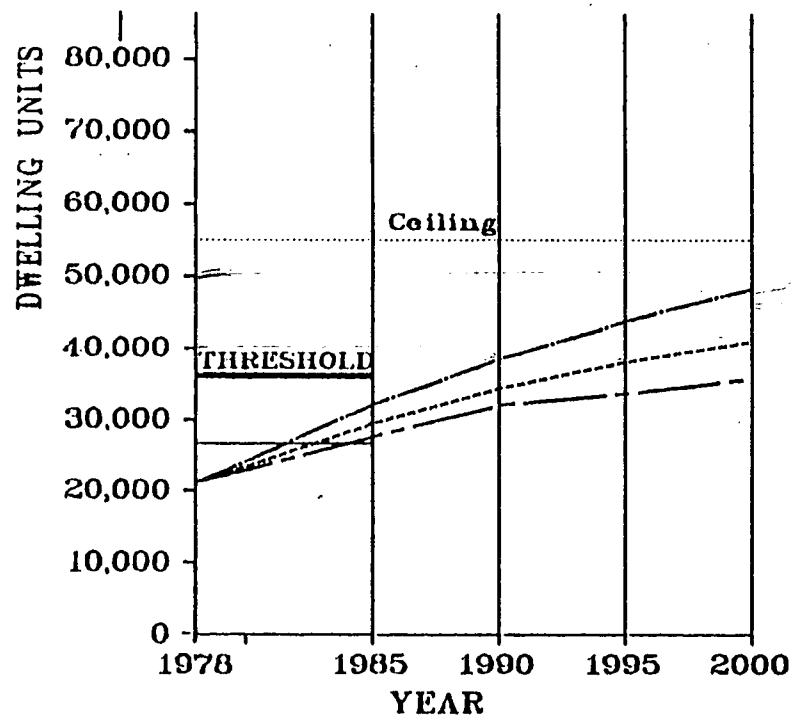
Because of the continuing build-up of traffic on Route 29 and the magnitude of potential development, the area south of Route 29 in the Maryland University farm area is a potential problem area.

Areas Appropriate for Subdivisions Using Public Sewer

The bulk of this area is already in category 1 and 2 of the Comprehensive Water Supply and Sewerage Plan. The only recommended addition is the inclusion of the University of Maryland Farm east of Route 29 as appropriate for sewer service.

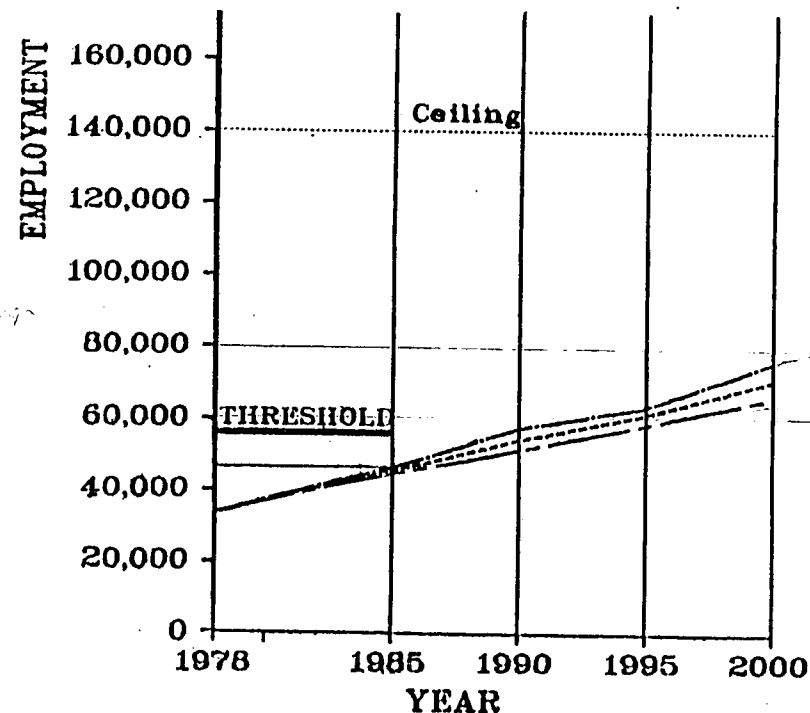
Eventually the entire area will be appropriate for sewer service.

GAITHERSBURG POLICY AREA



— = Threshold (15,000)
 — = Pipeline (5,539)
 - - = Low Growth
 . . . = Intermediate Growth
 - . - = High Growth

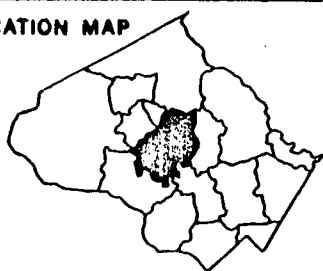
GAITHERSBURG POLICY AREA



— = Threshold (22,500)
 — = Pipeline (13,000)
 - - = Low Growth
 . . . = Intermediate Growth
 - . - = High Growth

GAITHERSBURG TRAFFIC SHEDS

LOCATION MAP



STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
I	GREAT SENECA HIGHWAY	C	\$20,067,000	MIDDLEBROOK RD. TO MD RT. 28
	ROUTE 355	S	\$3,275,000	BROOKS AVE. TO MONT. VILLAGE AVE.
	ROUTE 355	S	\$3,330,000	SHADY GROVE RD. TO SOUTH SUMMIT AVE.
	SHADY GROVE RD.	C	\$790,000	I-270 TO BRIARDALE RD.
	EASTERN ART	C	\$4,249,000	MONTGOMERY VILLAGE AVE. TO SHADY GROVE RD.
	FIELDS ROAD	C	\$3,065,000	PICCARD DR. TO MD RT. 355
	GAITHER ROAD	C	\$2,457,000	SHADY GROVE RD. TO FIELDS RD.
	OMEGA ROAD	C	\$1,544,000	FIELDS RD. TO MD RT. 28 RELOCATED
	REDLAND-FIELDS	C	\$3,000,000	MD RT. 355 TO NEEDWOOD RD.
	CRABBS BRANCH WAY	C	\$1,605,000	SHADY GROVE RD. TO REDLAND RD.

GAITHERSBURG

Transit Availability

Gaithersburg is currently served by private commuter bus, commuter rail and Ride-On bus. The Shady Grove metro station is scheduled to be in operation by 1983.

Critical Intersections

There are intersection problems along Route 355.

Policy Issues

Revised master plans for the City of Gaithersburg and for the vicinity are in their early review stage.

The area zoned R-200 south of Route 28 in the Potomac Subregion has been included in the Gaithersburg Policy Area. This R-200 zoned land will tend to use Route 28 as its transportation spine.

Relationship of the Development Pipeline to the Threshold

At present, the number of sewer authorizations is considerably below the threshold established for this area.

APF Problems

The area west of the interchange of I-270 and Shady Grove Road may have difficulty in meeting APF standards. There are large tracts of vacant land in this area with considerable latitude for commercial development.

Areas Appropriate for Subdivisions Using Public Sewer

Most of the Gaithersburg Policy Area is already in sewer categories 1, 2, and 3. As noted, there is considerable traffic capacity in this Staging Area.

A large portion of the area south of Route 28 will become appropriate for development using public sewer. Most of this area is currently in category 6 of the Comprehensive Water and Sewerage Plan. The land south of Route 28 has the potential of providing housing for people who will take advantage of ever increasing job opportunities around Shady Grove Road.

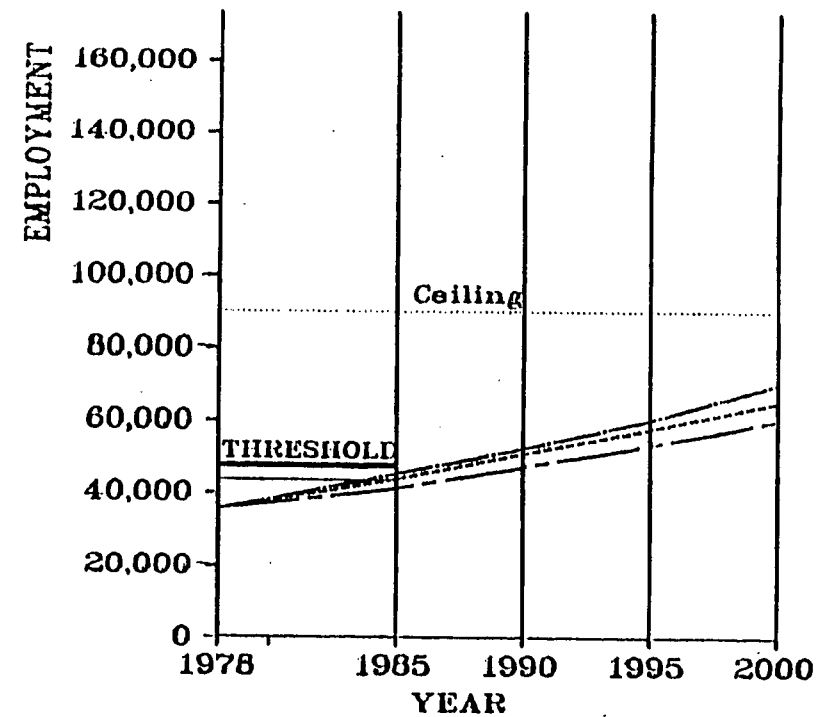
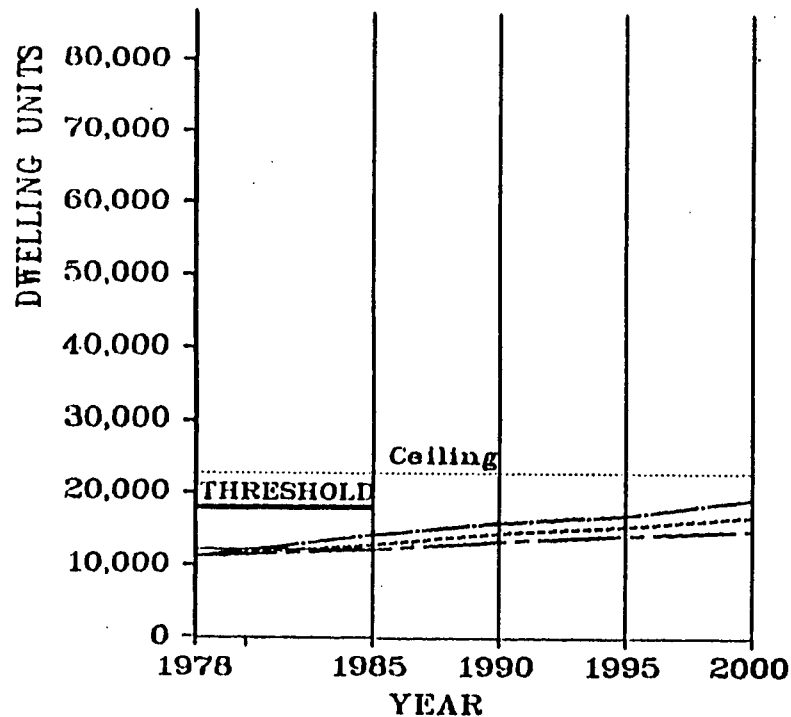
A small area north of the intersection of Airpark Road and Laytonsville Road (Md. Route 124) will be appropriate for public sewer.

Eventually the entire staging area will be appropriate for public sewer service.

NORTH BETHESDA POLICY AREA

GROUP IV POLICY AREAS

NORTH BETHESDA POLICY AREA



— = Threshold (18,700)

— = Pipeline (1,025)

- - = Low Growth

- - - = Intermediate Growth

- - - = High Growth

— = Threshold (12,000)

— = Pipeline (8,080)

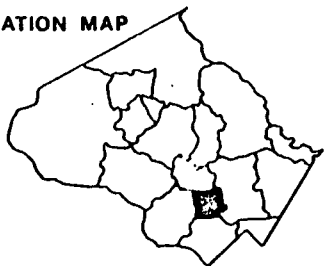
- - = Low Growth

- - - = Intermediate Growth

- - - = High Growth

NORTH BETHESDA POLICY AREA

LOCATION MAP



STAGE

ROADWAY

STATE OR COUNTY

ESTIMATED COST

1

FALLS ROAD INTERCHANGE

S

\$5,325,000

AT I-270

SEVEN LOCKS RD.

C

\$675,000

MONTHROSE RD. TO
RITCHIE PARKWAY

TUCKERMAN LANE

C

\$3,750,000

OLD GEORGETOWN RD. TO
MD RT. 355

TRANSIT STATIONS ACCESS PROJECTS

C

\$8,491,000

MD RT. 28/VEIRS MILL ROAD

S

\$5,931,000

MD RT. 355 TO VIERS
MILL RD. AT WOODBURN

FIRST STREET EXTENDED

CITY

\$2,555,000

VEIRS MILL RD. TO MD RT. 355

GUDE DRIVE AND RESEARCH BLVD.

C

\$3,378,000

MD 355 TO RESEARCH BLVD.

E. GUDE DRIVE

C

\$610,000

MD RT. 355 TO SOUTHLAWN

NORTH BETHESDA

Transit Availability

The North Bethesda area is served by regional buses and will have Metrorail service by 1983. A feeder bus system and McDOT Ride-On service will augment Metro service. In addition, there will continue to be Commuter Rail service to Garrett Park.

Critical Intersections

There are several of intersections already at level of service E within the area, along Old Georgetown Road, Montrose Road, and Nicholson Lane. Some of those conditions may be improved either temporarily or over long term, by several projects currently programmed, such as the extension of Tuckerman Lane and transit access projects in the vicinity of White Flint Station.

Policy Issues

North Bethesda contains only the planning area of North Bethesda/Garrett Park. Since Rockville has its own planning and zoning power no threshold will be set for it by the CSP.

Relationship of the Development Pipeline to the Threshold

The threshold is well above the number of sewer authorizations within the area. This is particularly true for residential development. Although much of the commercial land in North Bethesda has been given sewer authorization, additional ones could be granted without exceeding the threshold.

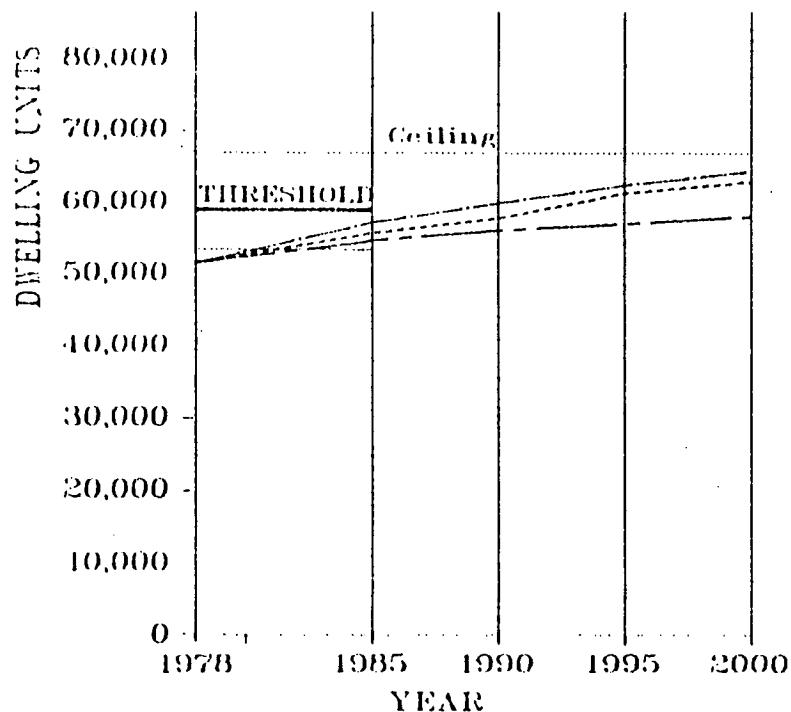
APF Problems

Under APF there are possible transportation service problems with the Davis Tract. This area will be studied in detail in connection with development applications from large employers.

Areas Appropriate for Subdivisions Using Public Sewer

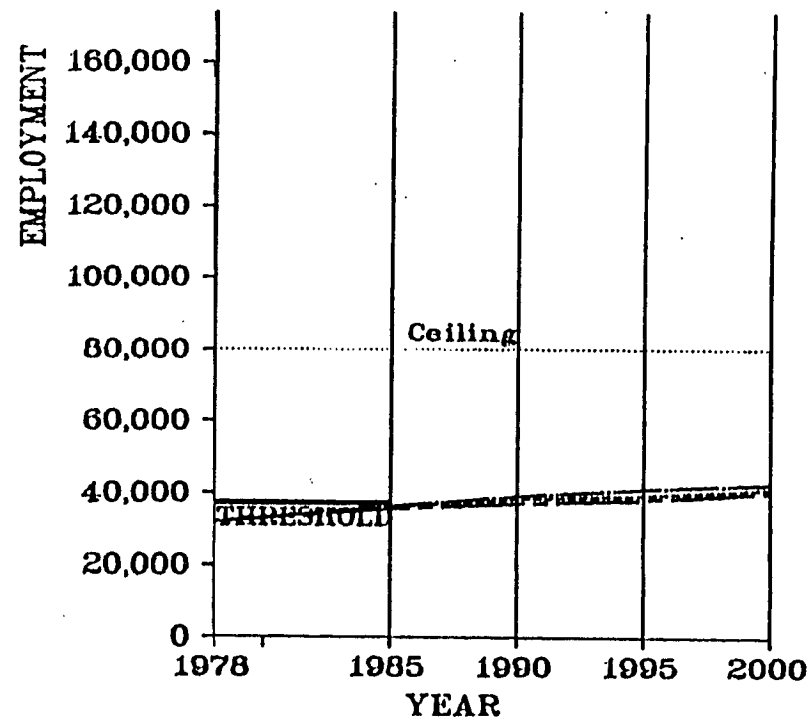
This area is in sewer Categories 1, 2, and 3 of the Comprehensive Water Supply and Sewerage System Plan. The CSP recommends no changes. All land in this area is appropriate for development using the public sewer system.

KENSINGTON/WHEATON POLICY AREA



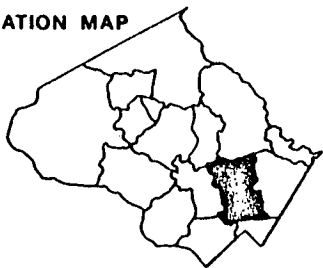
- Threshold (58,000)
- Ceiling (68,000)
- - - Low Growth
- · - Intermediate Growth
- · - High Growth

KENSINGTON/WHEATON POLICY AREA



- Threshold (35,000)
- Ceiling (80,000)
- - - Low Growth
- · - Intermediate Growth
- · - High Growth

LOCATION MAP



KENSINGTON/WHEATON POLICY AREA

STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
I	GEORGIA AVE.	S	\$3,032,000	BEL PRE RD. TO NORBECK RD.
	NORBECK RD. / MD RT. 28	S	\$4,179,000	BAUER DR. TO GEORGIA AVE.
	BEL PRE ROAD	C	\$1,945,000	GEORGIA AVE. TO LAYHILL RD.
	TRANSIT STATION ACCESS PROJECTS	C	\$220,000	

KENSINGTON/WHEATON

Transit Availability

The area is currently served by both regional bus and the Ride-On bus system. The completion of the Glemont Metro line from its terminal at Silver Spring is programmed for 1987, which is beyond the Stage I period.

Critical Intersections

There is a pattern of congestion at the intersections along Georgia Avenue.

Relationship of the Development Pipeline to the Threshold

There is room for considerably more dwelling units in the area. The employment threshold can accommodate only 500 more employees.

APF Problem

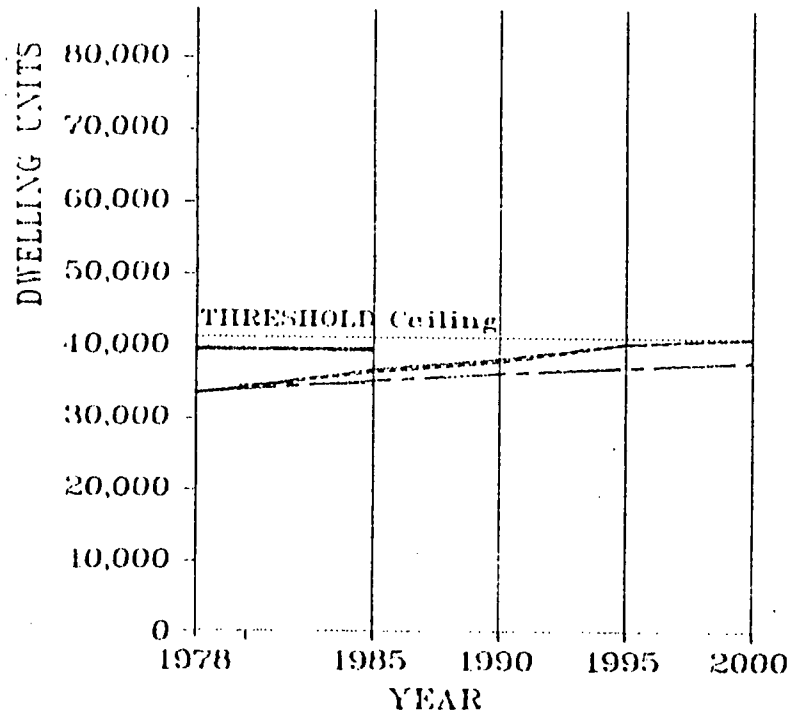
There are possible problems for new development near the intersection of Georgia and Dennis Avenues.

Areas Appropriate for Subdivisions Using Public Sewer

This area is in sewer Category 1 and 2 of the Comprehensive Water Supply and Sewerage System Plan. The CSP recommends no changes. All land in this area is appropriate for the application of subdivisions using the public sewer system.

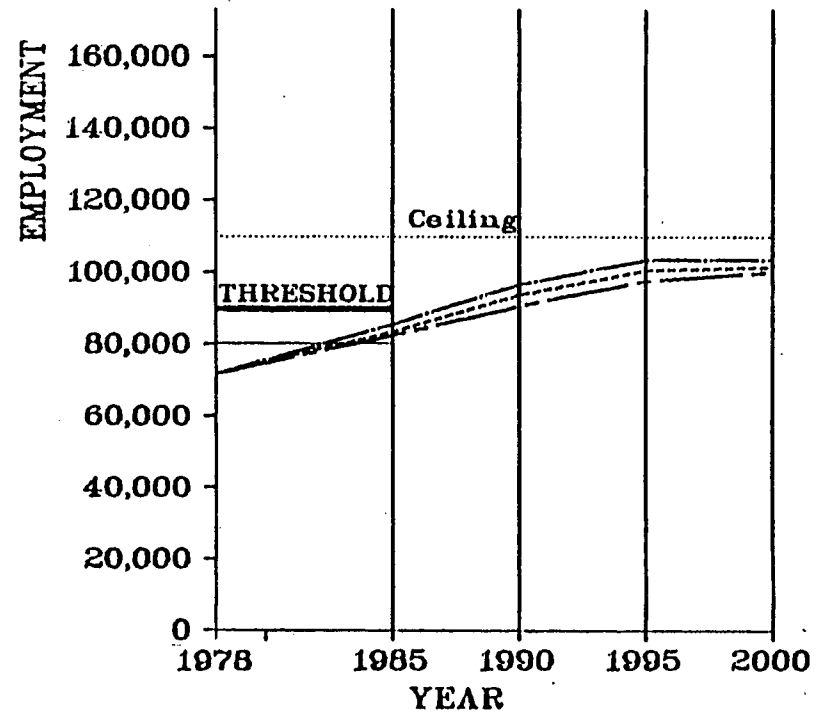
GROUP V POLICY AREAS

BETHESDA POLICY AREA

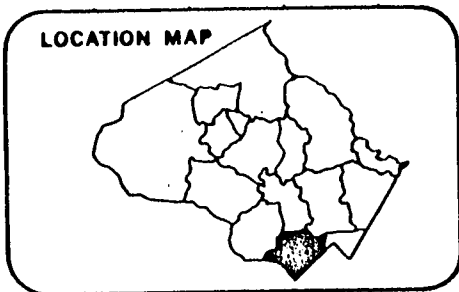


- Threshold (40,000)
- Pipeline (1,159)
- Low Growth
- Intermediate Growth
- High Growth

BETHESDA POLICY AREA



- Threshold (18,000)
- Pipeline (8,600)
- Low Growth
- Intermediate Growth
- High Growth



BETHESDA POLICY AREA

Programmed Transportation Improvements

STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
1	CAPITAL BELTWAY I-495	S	\$43,135,000	MD RT. 355 TO GEORGIA AVE.
	EAST-WEST HWY. COUPLET	S	\$790,000	MD RT. 355 TO B & O RAILROAD
	TRANSIT STATION ACCESS PROJECTS	C	\$6,845,000	

BETHESDA

Transit Availability

Bethesda will shortly have a full range of transit services available. It has an extensive regional bus network and will have Metrorail service by 1983. Initiation of a limited McDOT Ride-On Community bus service is programmed for the area prior to the opening of the rail service.

Critical Intersections

Most intersection problems occur along corridor roads: River Road, Wisconsin Avenue and Connecticut Avenue.

Policy Issues

The Friendship Heights Plan limits optional method development established for the area in absolute terms. It contains no staging proposals. Thus no change is made by the CSP in either the amount or timing of growth in Friendship Heights. In Bethesda, the CSP incorporates the limitations and staging recommendations of the Bethesda CBD Sector Plan as approved January 22, 1980 by the County Council. Nothing in the CSP will permit more development than would be allowed by the adopted Bethesda CBD Sector Plan. Development within the CBD, however, would be counted as part of the overall development within the Bethesda Policy Areas threshold.

Relationship of the Development Pipeline to the Threshold

The threshold for the area is significantly above the development pipeline.

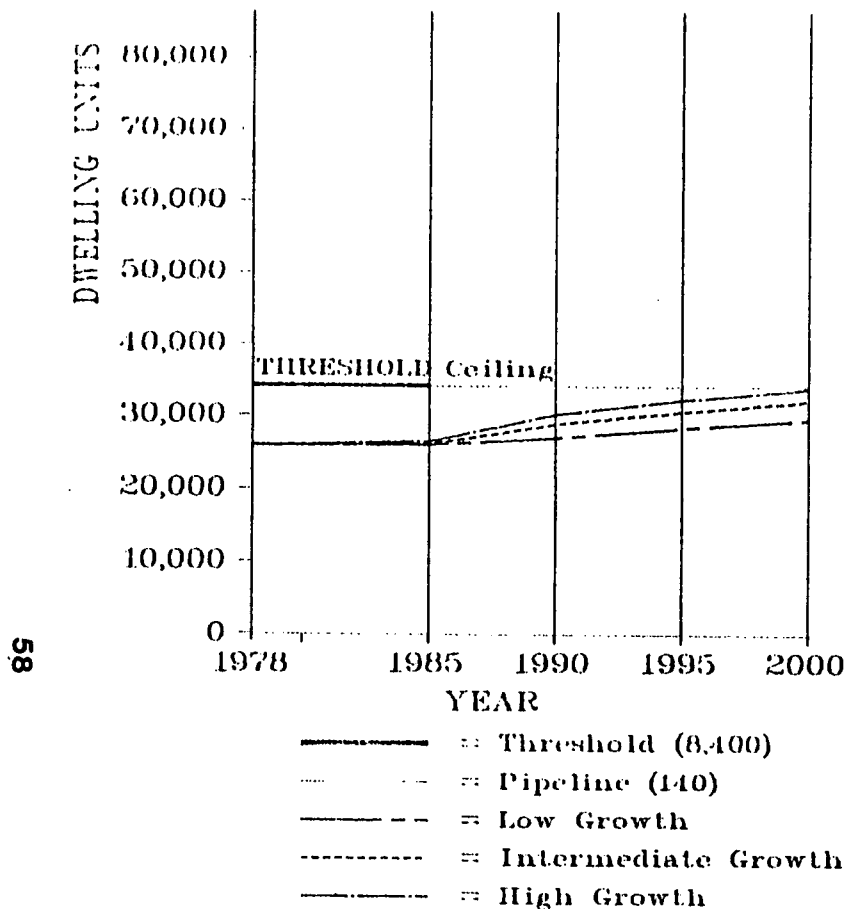
APF Problems

Under APF procedures the availability of transit, the combination of Metro, regional bus, and community bus service is likely to off-set road congestion problems. Capacity will be added to this area by the programming of two projects: the improvement to I-495 within the existing right of way and various transit station access projects.

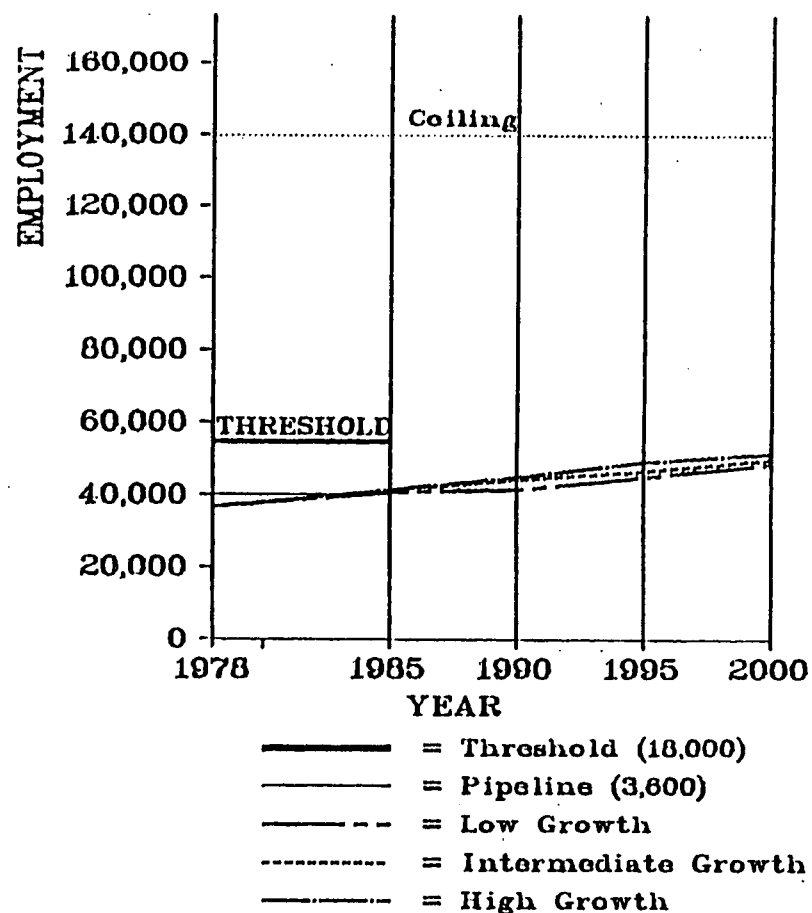
Areas Appropriate for Subdivisions Using Public Sewer

This area is in sewer Category 1 and 2 of the Comprehensive Water Supply and Sewerage System Plan. The CSP recommends no changes. All land in this area is appropriate for development using the public sewer system.

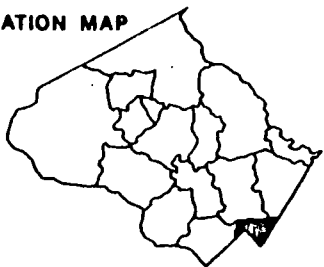
SILVER SPRING/TAKOMA PARK POLICY AREA



SILVER SPRING/TAKOMA PARK POLICY AREA



LOCATION MAP



SILVER SPRING/TAKOMA PARK POLICY AREAS

STAGE	ROADWAY	STATE OR COUNTY	ESTIMATED COST	LIMITS
I	CAPITAL BELTWAY I-495	S	\$43,135,000	MD RT. 355 TO GEORGIA AVE.
	BROOKVILLE RD.	C	\$3,390,000	LYTTONSVILLE PLACE TO SEMINARY RD.
	ROEDER RD./ FENTON ST EXTENDED	C	\$1,019,000	

SILVER SPRING

Transit Availability

Silver Spring has the greatest transit availability of any area within the County. Metro currently serves Silver Spring and is supported by an extensive feeder bus system. The area is also well served by the regional bus system.

Critical Intersections

There are intersection problems primarily along Georgia Avenue and Colesville Road.

Policy Issues

Silver Spring is the subject of a joint revitalization program sponsored by the County, the Planning Board and local groups. Efforts are being undertaken to attract significant new development to the downtown area.

Relationship of the Development Pipeline to the Threshold

The threshold for the Silver Spring area is well above the outstanding sewer authorizations. The area should have no problem accommodating the type of significant development designed for the area. Because of transit availability, the Silver Spring area will not have problems under APF. The major project already in the program for construction is the improvement of the Capital Beltway between Georgia Avenue and Wisconsin Avenue.

Areas Appropriate for Subdivisions Using Public Sewer

This area is in sewer Category 1 and 2 of the Comprehensive Water Supply and Sewerage System Plan. The CSP recommends no changes. All land in this area is appropriate for development using the public sewer system.

GLOSSARY

APF

Adequate Public Facilities Ordinance - a provision in the subdivision regulations which requires that existing and proposed public facilities be sufficient to accommodate proposed private development. The ordinance to be administered by the Montgomery County Planning Board.

CBD

Central Business District - areas of relatively high development density and a wide variety of land uses served by metrorail.

CIP

Capital Improvements Program - a County-wide, six-year program prepared by the County Executive and adopted annually by the County Council which schedules and appropriates funds for public service improvements and facilities.

CSP

Comprehensive Staging Plan-an amendment to the General Plan that establishes interim limits or "threshold" within policy areas based upon the capacity of the approved transportation program at a reasonable level of service.

Development Pipeline

The number of units of housing or employment which have obtained preliminary subdivision approval and have proceeded through the permit process at least to the point of obtaining sewer authorization.

General Plan

The County-wide comprehensive plan for Wedges and Corridors adopted in 1964 and revised in 1969, which provides the overall framework for the County's development. The General Plan incorporates as amendments, all approved and adopted master sector and functional plans.

LOS

Levels of Service - indicators of the degree of congestion of the road system.

Record Plat

The officially recorded drawings of lots in approved plans of subdivision. The record plat is part of the land records of the County describing each parcel of land and any restrictions on its use.

Sewer Authorization

The action taken by the Washington Suburban Sanitary Commission indicating its agreement to extend the public sewer system to serve a particular parcel of land area.

Staging

The timing of development and public facilities to avoid both unacceptable standards of service and under-utilized facilities.

Sunset Clause

A provision in the Resolution of Adoption which limits the time in which the resolution is applicable. The absence of council action by that date will result in the automatic lapse of the resolution and the thresholds in the Staging Plan.

Threshold

The upper limit of private development which can be accommodated at a reasonable level of service within an area during Stage I, based on the existing system and approved facility programs.

APPENDIX

- I Description of the Standard of Transportation Service Standards
- II* Draft Amendment to the Adequate Public Facilities Ordinance (Subdivision Ordinance)
- III* Draft Amendment to the Comprehensive Water Supply and Sewerage System Plan

* These are draft amendments which should be independently acted upon after the CSP is adopted. They will require adequate notice of public hearings, and County Council Action.

APPENDIX I

EXPLANATION OF THE STANDARD OF TRANSPORTATION SERVICE

USED IN THE COMPREHENSIVE STAGING PLAN¹

The Problem

Once an area is scheduled to receive water and sewer service, the most critical facility needed to serve any new growth is transportation. An estimate must be made of how much new growth an area's transportation facilities can serve without exceeding reasonable standards of service for that area. The idea is simple, but it is then necessary to establish those service standards. Certain criteria for these standards were deemed desirable:

1. The standards should include both public transportation availability and automobile traffic congestion.
2. The standards should be capable of being applied on an area basis rather than only at a particular point in the system.

¹ For those interested in a more detailed explanation of the simulation model used in this study, technical papers are available from the Transportation Planning Division, Montgomery County Planning Department (phone: 565-7390).

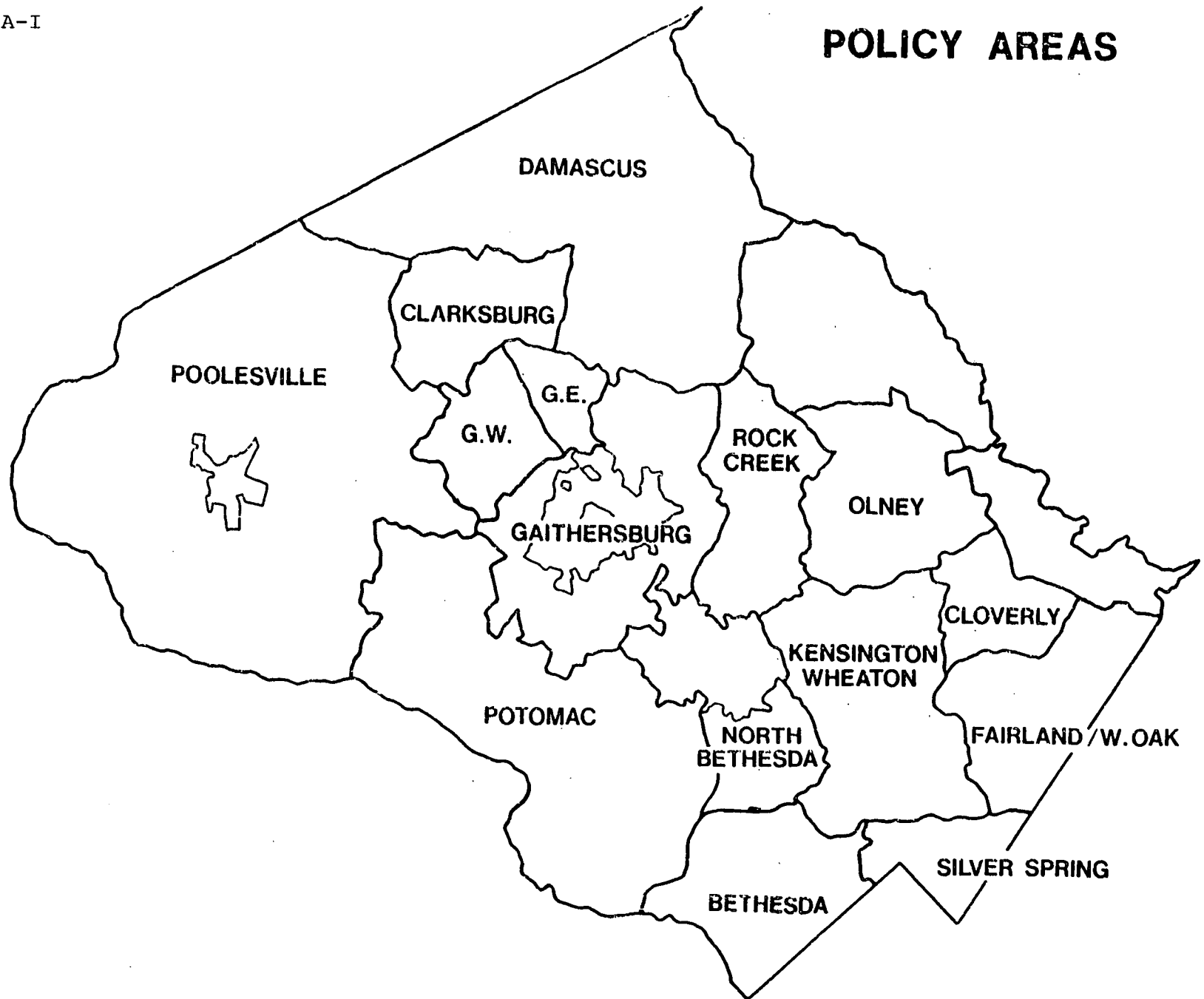
3. They should allow for a range of conditions in accordance with the policy objectives of the County with respect to the different levels of density recommended by the General Plan and Adopted Master Plans.
4. They should be designed to encourage--or at least not impede--the use of public transportation.

A balance between transportation facilities and development is hard to strike because most transportation facilities, when built, provide a large increment of additional capacity. Each new development, however, uses only a tiny fraction of that capacity. One problem in measuring the traffic impact of development, therefore, is that of attributing or tracing the marginal effect of a few new trips to a particular road or intersection. It is, therefore, more useful to be able to aggregate new developments and look at their cumulative effect on the transportation capacity of a larger area, measured by a reasonable level of service for that area. As explained in the CSP, this approach allows both potential developers and the public to know, in advance, how much more development can be permitted without exceeding the area's service standards.

Under existing procedures, no advance knowledge exists. The Adequate Public Facilities Ordinance is administered strictly on a case-by-case basis and judged, as to traffic, solely by impact on the nearest critical intersection. This penalizes large developments close to congested intersections, but allows smaller developments scattered about an area to proceed although their cumulative effect on the same intersection may be the same or greater. Area impacts are simply not considered.

As indicated above, the impact of growth on transportation facilities can be measured better on an aggregate, area-wide basis than on a project-by-project basis.

Figure A-I



In this way, the interaction between areas and the downstream impact of traffic can be analyzed.

It is not reasonable to expect that the level of roadway congestion will be uniform throughout the County. Rural areas where people must depend on automobiles should expect less road congestion than central business districts where people can walk to Metro, and where frequent and convenient bus service is available. Areas with alternatives to the automobile should tolerate more congestion, based on the increasing degree of transit availability. Areas planned for intensive development must also expect a greater concentration of travelers.

In line with these general propositions and criteria, the transportation system and transportation characteristics of all parts of the County was analyzed, using the Planning Board's transportation model, a computerized system that uses essentially the same data and techniques as the Washington Regional Transportation Planning Board's analytical system. The County was divided into "traffic sheds"--small areas where traffic flows predominately to a few major and arterial roads. Contiguous traffic sheds which are closely related on the basis of traffic flow, similar transportation behavior, and common facilities were then grouped to form policy areas. These areas, identified in Figure A-1, are the basic geographic units for establishing staging thresholds in the CSP. Many of them correspond to planning area boundaries.

Transit Levels of Service

The policy areas were further organized into five groups based on an analysis of the degree of public transportation service available to them. Table A-1 outlines these five levels of transit service and their basic characteristics.

TABLE A-I

TRANSIT LEVELS OF SERVICE

Public Transport Alternatives to Automobile Travel	Transit Availability
None	Park-n-Ride only.
Limited	Regional bus and/or commuter rail access as well as park- n-ride.
Moderate	Regional bus ^{and} and/or commuter rail access as well as park- n-ride limited metrorail and bus feeder systems.
Frequent	Metrorail, regional bus, feeder bus and community bus, kiss- n-ride.
Full Service	More frequent Metro-rail, concentrated feeder and community bus, kiss-n-ride and easier walk access.

These five classes of transit service were then used to group the policy areas for the purpose of applying standards of service for roadway congestion. It was reasoned that as transit service standards decline, road congestion standards should provide for better service. Conversely, as transit availability increases, roads should be allowed to reach their capacity as people have, and should be encouraged to use, a convenient alternative to the automobile.

Roadway Levels of Service

The most commonly recognized index for measuring the quality of traffic flow, or level of service, for individual intersections or segments of road, is the A-F "letter grades" of the Transportation Research Board of the National Academy of Science. These are described by Table A II.

Some of these measures have long been applied as design standards for peak hour conditions. LOS B is normally applied as the highway design standard in rural areas; C conditions to the urban fringe or suburban areas; and D to urbanized areas.

It should be emphasized that these design standards do not assume that the physical capacity of a road will be fully utilized when the standards are reached. From an economic viewpoint, the most efficient road system operates at, or near, its capacity. The capacity of any road is approached when it begins to operate at LOS E during the peak hour of use. The maximum for efficient operation, from an engineering point of view, is LOS E. The D/E level of service is generally regarded as acceptable for the urban traveler. For the individual, of course, LOS A would be ideal.

Travelers normally experience several levels of service at different parts of their trip and at different times of the day. Someone going to an all-night drug store at

TABLE A-II

INDIVIDUAL ROADWAY LEVELS OF SERVICE QUALITY

LOS	Quality of Traffic Flow
A	Conditions of free unobstructed flow, no delays and all signal phases sufficient in duration to clear all approaching vehicles.
B	Conditions of stable flow, very little delay, a few phases are unable to handle all approaching vehicles.
C	Conditions of stable flow, delays are low to moderate, full use of peak direction signal phase(s) is experienced.
D	Conditions approaching unstable flow, delays are moderate to heavy, significant signal time deficiencies are experienced for short durations during the peak traffic period.
E	Conditions of unstable flow, delays are significant, signal phase timing is generally insufficient, congestion exists for extended duration throughout the peak period.
F	Level of Service F: Conditions of this describes a forced-flow operation at low speeds, where volumes are below capacity. In the extreme, both speed and volume can drop to zero. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of the downstream congestion.

three o'clock in the morning will probably experience LOS A for the entire trip--that is, free flow, congestion-free traffic conditions. The next-door neighbor may go to work at that same drug store at eight o'clock the next morning and experience LOS D, or even E or F conditions for some parts of the trip because many other people are also traveling at that same time.

LOS D on the Beltway, would mean having to travel between 35 to 45 miles per hour, with little freedom to change lanes and fluctuating traffic flow approaching unstable conditions. If some LOS D conditions are experienced at intersections along an arterial roadway, there will be a 70 percent chance of waiting through one or two stop light cycles.

At LOS E, an individual experiences the maximum capacity of the roadway. Traffic flow is unstable, with speed hovering near 30 miles per hour, and most motorists (about 85 percent or more) waiting through several red cycles. While LOS E uses the maximum capacity of the roadway, it provides only a minimum of comfort for the urban traveler. LOS F is the condition of stop-and-go traffic; there is forced flow and traffic backing up. LOS F represents fully congested conditions, commonly called a "traffic jam," and is beyond the acceptable comfort range for the average traveler.

These traditional LOS categories apply to specific roads or intersections. They involve both mathematics and human judgment or perception. To make the Staging Plan work, it is necessary to devise a means of applying this well-known scheme of measuring congestion to a network of roads in a policy area. This requires use of a traffic simulation model, and, therefore, the translation of a A-F grading system into a set of numerical values.

Explanation of the CSP Standard of Service Index

Figure A-2 shows that each letter in the A-F congestion grading system, like the letter grades assigned to school work, covers a range of individual conditions. The line of demarcation separating one category from another is not precise. It is easy to distinguish between LOS C and LOS E, but difficult to know when a low C has eroded to a high D.

Because these levels of service (A-F) for specific intersections and segments have been widely used to describe congestion levels in zoning cases and subdivision review, they have been adapted here, as in master plans, for use as a reference point to assist public understanding of the areawide service standards. These standards can be developed only through area-wide traffic measurement or simulation. In order to develop or use such a simulation, the letter grading system must be converted to a mathematical measure. This measure is called the volume to capacity (V/C) ratio.

In establishing V/C ratios, the norm, with an index value of 1, has been set at the mid-point of LOS C. Figure A-II then shows how the V/C ratio relates to different points along the letter grade scale. Both the V/C ratios and the letter grades describe roadway quality, but the V/C ratio provides a mathematical measure that can be aggregated, through statistical techniques, to describe the average condition for an entire area, rather than just the condition of a specific segment of roadway.

Figure A-II shows how the letter grades are correlated to the V-C ratio numbers, using the standard practice of calibrating level of service C to a V-C ratio of 1.0. Because it is desirable to describe traffic conditions in finer tuned increments than the original six letters, the intermediate categories of A/B, B/C, etc have been defined to cover 15 percent of the next lowest category together with 15 percent of the next highest category.

Figure A-II

ROADWAY LEVELS OF SERVICE

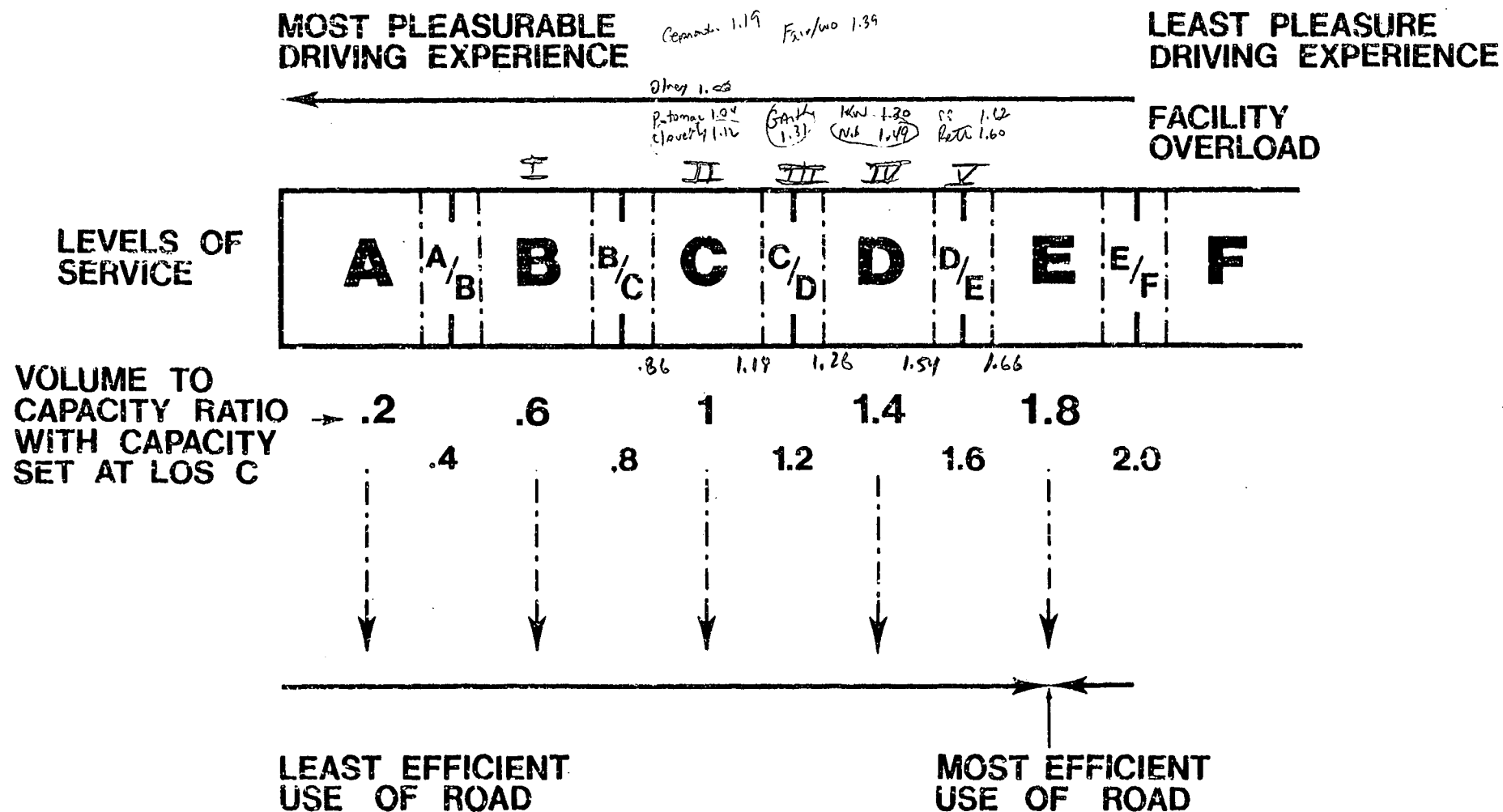
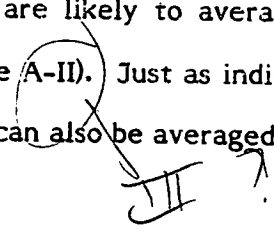


Figure A-II also highlights the conflict between interpreting highway needs and congestion levels from the perspective of the individual traveler and from that of one concerned with cost-effective planning of facilities. For the individual, lower congestion levels provide the most pleasurable driving experience, and travel becomes less and less pleasurable as congestion levels rise toward LOS F. On the other hand, from a public cost viewpoint, congestion levels found at A or B are least efficient, whereas volume to capacity ratios found at levels of D/E and E offer the most efficient use of the road system.

Roadway Levels of Service: Average By Area

In making a trip, one generally encounters fully congested conditions--level of service E or F--for only a portion of that trip, if at all. If people know of likely congestion from having previously made similar trips or from radio reports, they tend to alter their routes, if possible, to less congested ones. People frequently choose among several possible routes. Their choice is usually based upon their sense of which route will be least congested. When individuals evaluate the congestion level for a particular trip, they are likely to average their experience with different roadway conditions. (See Table A-II.) Just as individuals tend to average their trip experience, the group experience can also be averaged.



The transportation methodology used in the CSP attempts to calculate this average (group experience) and describe it in terms of the central tendency, or commonly experienced level of service letters for each of the five policy area groupings. For easier reference, the V/C ratios have been converted after aggregation, back to the familiar letter grades, but this time marked with a bar to indicate that they are average levels of service for areas, not for individual facilities. Thus, these area-wide averages designate the dominant peak hour condition

TABLE A-III

AVERAGE ROADWAY LEVELS OF SERVICE FOR POLICY AREA GROUPS

Policy Area Group	Roadway Quality Measures					Probable Predominant Congestion Patterns
	Average Peak Hour LOS Standard	Maximum Percent Peak Hour Travel* Permitted at LOS E or F	Probable Maximum Percent (week day) Daily Travel* At LOS E or F	Normal Duration of LOS E or F, Typical Day		
I	B	0	0%	-		Occasional isolated intersections.
II	<i>Closeby 1.12 Potomac 1.04</i> C	10	4% $1\frac{1}{2}$	$\frac{1}{4}$ - $\frac{1}{2}$ hour $\frac{3}{4}$ - 2		Radial major highways.
III	C/D	35	7% 2	$\frac{1}{2}$ - 1 hour 1 - 2		Freeways and radial major highways.
IV	D	50	10% $2\frac{1}{2}$	$\frac{1}{2}$ - $1\frac{1}{2}$ hours $1\frac{1}{2}$ - $2\frac{1}{2}$		Freeways, radial major highways, cross country major highways, radial arterials and at grade intersections of majors.
V	D/E	65	20% 3	$1\frac{1}{2}$ - 2 hours $1\frac{1}{2}$ - 3		Freeways, radial major and arterial highways, cross country major and arterial highways, intersections of above and pressure on primaries within CBD areas.

* Travel = total vehicle miles traveled, on all arterial and major roads within a given area, within a given period of time. Primary and secondary County streets were not included in road capacity calculations.

experienced by the group and all the specific intersections or segments of road throughout the area being analyzed.

In addition, Table A-III shows that the standard includes a limitation on the degree to which this average may be exceeded. For example, in Table A-III, service standard \bar{D} means that, as a matter of policy, not more than 50 percent of the peak hour travel in the areas involved should be allowed to experience LOS E or F. This recognizes that some parts of the road system will operate at full capacity during peak hour; others will flow freely. The average condition for peak hour trips in the whole area, however, would be expressed as \bar{D} .

As shown in Table A-III, when the average peak hour standard of service moves from \bar{B} toward \bar{D}/\bar{E} , the maximum percentage of peak hour traffic permitted to experience LOS E or F also increases. For example, the recommended peak hour standard of service for Group V is \bar{D}/\bar{E} , a level that efficiently uses the road system. Not more than 65 percent of all peak hour travel may experience conditions at LOS E or F. These areas, of course, are the most densely developed and best served by public transportation.

The right hand portion of Table A-III expresses these standards in other ways to assist understanding of what could be expected in terms of travel experience as the transportation capacity of each policy area is reached. Column 4 indicates the maximum probable percentage of daily (Monday through Friday) travel* that would experience LOS E or F. Column 5 shows the normal duration of these E or F conditions on a typical day. This time would be divided between morning and evening peak

* For definition of travel see Table A-III.

periods. Normally the evening peak is somewhat longer than the morning peak period. The last column describes the kind of road facilities most likely to experience the higher levels of congestion.

Again looking at Group V, its transportation system can be expected to operate close to maximum capacity during peak periods. However, during most of any typical day, the system will experience better conditions, and 80 percent of all daily travel will occur at LOS \bar{D} or better.

TOTAL TRANSPORTATION LEVEL OF SERVICE

Table A-IV summarizes the correlation between transit level of service and average highway level of service in the different areas of the County. The CSP accepts such a relationship as a matter of policy, recognizing that an explicit relationship ought to exist in the Staging of the Comprehensive Plan. This relationship is expressed by the use of a total transportation level of service for different areas of the County.

The roman numeral standards in the first column of Table A-IV correspond to the policy area groups in Table A-III. Figure A-III applies these combined standards to the policy areas.

- I. Standard I, selected for the outlying wedge areas basically follows the highway engineering approach of having all highways operate under free flow, less than capacity conditions LOS \bar{B} . This also provides for accommodating Statewide and inter-regional travel basically according to demand because transit is not a viable substitute.

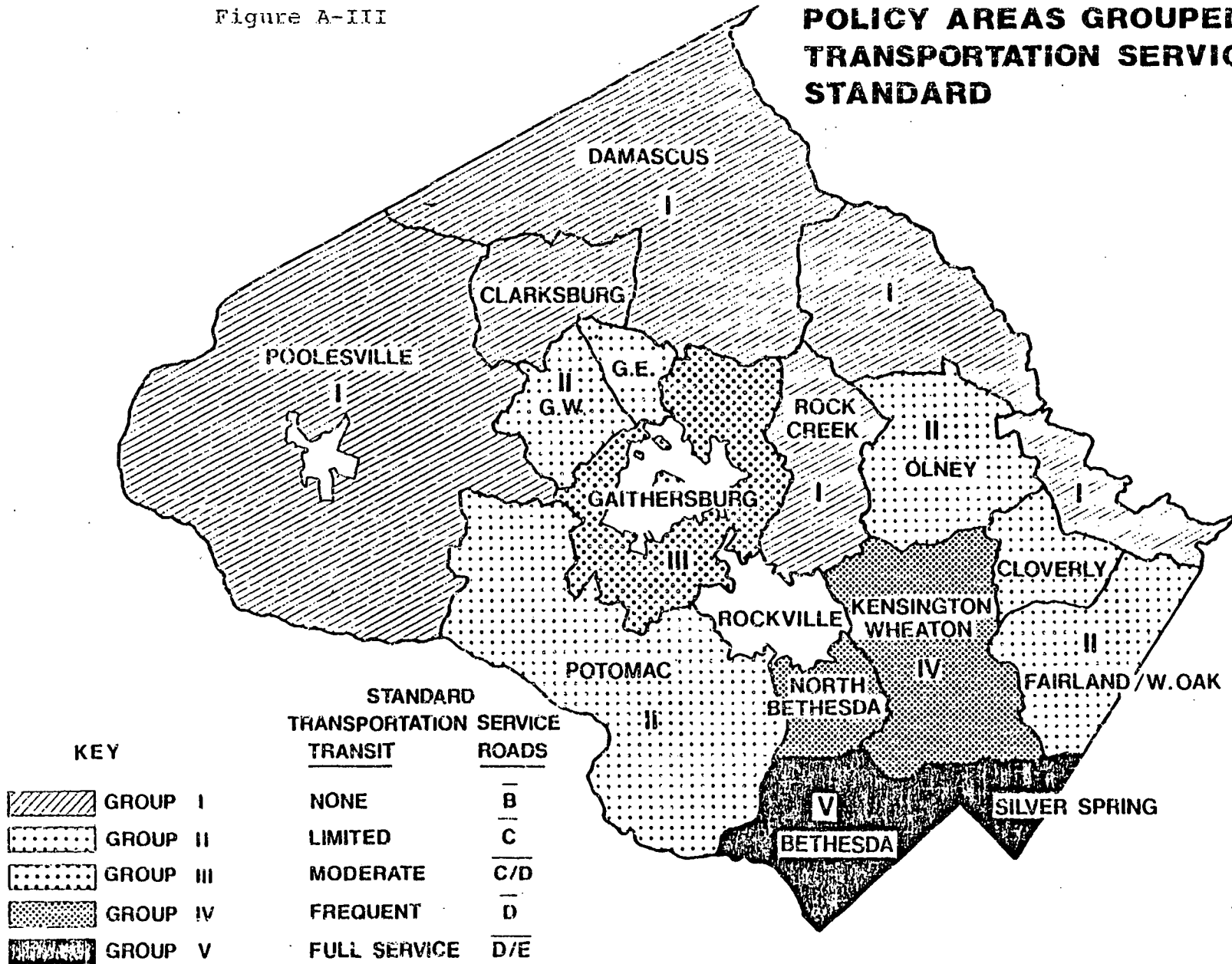
TABLE A-IV

TOTAL TRANSPORTATION SERVICE STANDARDS

Total LOS	Traffic LOS at Average Peak Hour	Transit LOS
I	\bar{B}	None
II	\bar{C}	Limited
III	\bar{C}/\bar{D}	Moderate
IV	\bar{D}	Frequent
V	\bar{D}/\bar{E}	Full Service

Figure A-III

POLICY AREAS GROUPED BY TRANSPORTATION SERVICE STANDARD



- II. Standard II, applied in the developing fringe area, is based upon the observation that historically in the developing suburban fringe small levels of highway congestion have been observed at LOS average \overline{C} . It can be anticipated that only a small percentage of the system in this area will experience LOS E or F conditions. The modest levels of the regional transit service being provided in this area can be relied upon to maintain an acceptable overall transportation service.
- III. Standard III has been applied to take into account limited regional commuter rail service and metrorail service. Gaithersburg will have this level of transit service at its edge, and is designated as a Group III area, differentiating it from the other areas in the developing suburban fringe.
- IV. Standard IV is used in the urbanized areas outside the Beltway. It recognizes that significant levels of congestion on the highway system are acceptable, and could even be said to be desirable, for the substitution effects of transit to occur. The level of roadway congestion in these areas could be greater than current measured LOS of $\overline{C/D}$ because transit availability will be greater.
- V. Standard V is applied to urban areas inside the Beltway. This will allow for maximum use of transportation facilities but will still maintain an acceptable average level of service for this highly urbanized area. Increasing roadway congestion from the current average level of \overline{D} to $\overline{D/E}$ will be offset by the Metrorail and bus systems.

Transportation Level of Service (LOS) Measurement Used in the CSP Compared to Other Approaches

The CSP measures transportation levels of service within subareas of the County. This approach produces a result similar to that obtained in the sector plans where degrees of traffic congestion were measured at the perimeter of the sector plan area. The sector plans permit a maximum average level of congestion for all key intersections at the perimeter. The average is set at LOS $\overline{D/E}$. This "perimeter" method recognizes that while the average permitted is D/E some of the traffic volume entering the perimeter will be at higher levels of congestion, but this will be offset by other traffic at lesser congestion levels. The CSP establishes a set of policy areas whose transportation and land use characteristics permit the use of average level of service criteria for APF purposes. The CSP measures the levels of traffic congestion along the major highways or arterials within the policy area, in contrast to perimeter traffic measurements used in sector plans.

The CSP recognizes that in some instances it is reasonable to apply staging thresholds to small subareas that constitute unique planning considerations. The Bethesda Sector Plan Area was judged to have special traffic circulation problems which are best handled by the specific staging criteria contained in the Sector Plan.

The transportation service standards of the CSP and sector plans measure the impacts of a magnitude of growth on the average congestion conditions for a geographic area. The 1973 APF approach measured the service level impact of an individual subdivision on a specific facility--the nearest critical intersection.

In summary, the "perimeter" and "area" measures are similar in that they both measure impacts of a magnitude of growth on the average congestion conditions for a geographic area while the original APF method measured the impact of an individual development proposal on a specific facility.

APPENDIX II

Proposed Amendments to The Adequate Public Facilities Ordinance 50-35-K

a. The tract or area is adequately accessible by means of roads and public transportation facilities. In its determination of the adequacy of a road to accommodate traffic, the planning board shall consider the recommendation of the State Highway Administration or County Department of Transportation, the applicable levels of traffic service, peak hour use and average use, and any other information presented.

(i) Said area or tract, when Located in a Staging Area without a development threshold specified in the Comprehensive Staging Plan, shall be deemed adequately accessible via roads and public transportation facilities if any of the following conditions are present:

1. ~~(i)~~ Existing roads are adequate to accommodate the traffic that would be generated by the subject subdivision in addition to existing traffic, and are publicly maintained, all-weather roads; or

2. ~~(ii)~~ Such additional roads, necessary in combination with existing roads to accommodate the additional traffic that would be generated by the subject subdivision, are proposed on an adopted master plan and are programmed in to have at least fifty percent of their estimated construction cost scheduled for use

within the time frame of the current adopted six-year Capital Improvements Program for the State Highway Administration's consolidated Transportation Program with public or private financing; or

3. ~~(iii)~~ Public bus, rail, or other form of mass transportation sufficient to serve the proposed subdivision, in combination with (i) 1 or (ii) 2 or both, is available or programmed within the area affected or within one-third mile of the subdivision under consideration.

~~(iv) In its determination of the adequacy of a road to accommodate traffic, the planning board shall consider the recommendation of the State Highway Administration or County Department of Transportation, the applicable levels of traffic service, peak hour use and average use, and any other information presented.~~

(ii) Said area or tract, when located in a Staging Area with a development threshold specified in the Comprehensive Staging Plan, shall be deemed adequately accessible via roads and public transportation facilities if one of the following conditions is present:

1. The total amount of development proposed for the tract, when added to previously approved development with sewer authorizations, does not exceed the threshold for its staging area, as defined in the adopted Comprehensive Staging Plan; with the exception that an application may be denied, even though it does not exceed the threshold, if it is demonstrated that it will produce excessive local traffic congestion with a significant detrimental effect on adjacent land uses.

2. The applicant agrees to provide the appropriate additional public facility capacity necessary to lift the threshold high enough to accommodate the project.

(b) The tract or area has adequate sewerage and water service.

(i) For a subdivision dependent upon public sewerage and water systems:

1. Said area or tract to be subdivided shall be deemed to have adequate sewerage and water service if located within an area in which water and sewer service is presently available, under construction, or designated by the county council for extension of water and sewer service within the first ~~two~~ six years of a current approved ten-year water and sewerage plan.

APPENDIX III

DRAFT AMENDMENT TO CHAPTER I COMPREHENSIVE TEN YEAR WATER SUPPLY AND SEWERAGE SYSTEM PLAN

In conformance with the Montgomery County Comprehensive Staging Plan, a sewer authorization may be granted only to new development in Montgomery County which has been approved under the Adequate Public Facilities Ordinance, by the Montgomery County Planning Board.

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